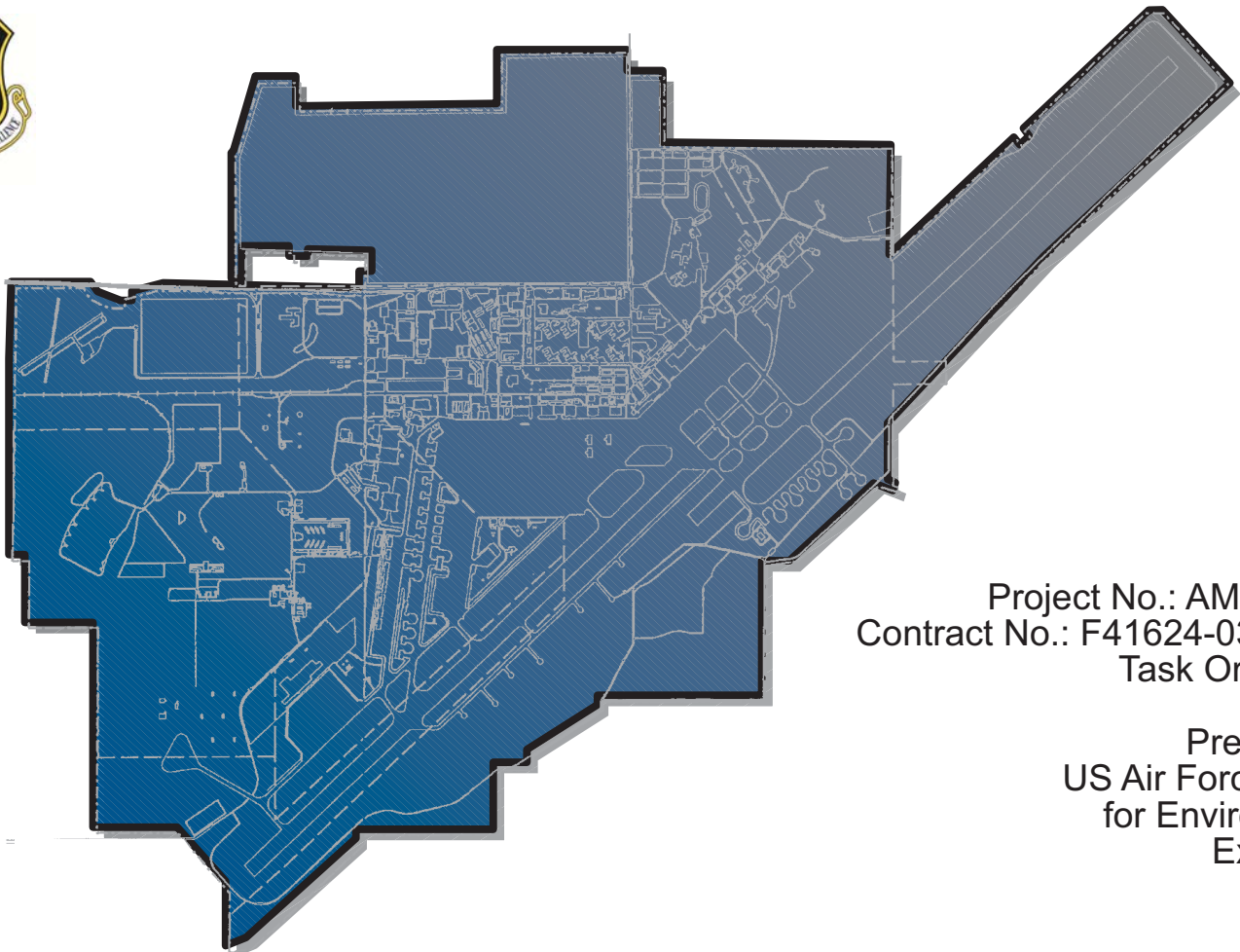




Final Environmental Assessment for the Replacement of Water Reservoirs



Project No.: AMC204638
Contract No.: F41624-03-D-8595
Task Order 0202

Prepared for
US Air Force Center
for Environmental
Excellence

March 2005



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Final Environmental Assessment for the Replacement of Water Reservoirs

**CDRL A001B, A001D, A001E, and A001J
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**Prepared for
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March 25, 2005

**2485 Natomas Park Drive, Suite 600
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FINAL FINDING OF NO SIGNIFICANT IMPACT (FONSI) ENVIRONMENTAL ASSESSMENT FOR THE REPLACEMENT OF WATER RESERVOIRS

TRAVIS AIR FORCE BASE, CALIFORNIA

Introduction

This Finding of No Significant Impact (FONSI) was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969; Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA, 40 Code of Federal Regulations (CFR) 1500 through 1508; and The Environmental Impact Analysis Process, 32 CFR 989. The decision in this FONSI is based on information contained in the *Environmental Assessment (EA) for the Replacement of Water Reservoirs at Travis Air Force Base (AFB)*. The purpose of the EA is to determine the extent of environmental impacts that might result from proposed improvements at Travis AFB and to evaluate whether these impacts, if any, would be significant.

The objectives of this action are to replace the existing, deteriorating water reservoirs, which are concrete storage tanks identified on the Travis AFB Real Property Inventory as Buildings 1516, 1518, and 1520, with new, larger steel reservoirs designed to meet state environmental and health and safety requirements for drinking water storage and Travis AFB Water Master Plan requirements. The three reservoirs hold water that is used to meet the potable water needs of Travis AFB. The potable water needs at the Base include drinking, washing, and firefighting capacity. The existing reservoirs were built in the 1940s and 1950s and have reached the end of their functional lives.

Description of Proposed Action and Alternatives

The alternatives that have been analyzed to accomplish the action include the No Action Alternative and the Proposed Action. To be considered a reasonable alternative for water storage, the alternative should meet or exceed state Health and Safety Code requirements for water storage; comply with U.S. Air Force (Air Force) and Department of Defense planning and design manuals, design standards, and safety requirements for drinking water operations; meet the Travis AFB Water Master Plan requirements; be environmentally sound; and avoid or minimize impacts to natural resources.

The Air Force proposes to demolish and replace existing water reservoir Buildings 1516, 1518, and 1520. Replacement of the reservoirs would be in place. Demolition and construction of the reservoirs would be phased to maintain water pressure and volume required for the Base water supply and firefighting capabilities. Tank demolition and construction would take between 8 and 12 months for each tank.

No alternatives other than the No Action and the Proposed Action are discussed in the EA. Options that were considered but rejected because they did not meet the selection criteria included building at other locations, depending on neighboring cities for water supply needs, refurbishing the three existing reservoirs, and constructing fewer tanks larger in size than the proposed reservoirs. The No Action Alternative was carried forward for analysis in accordance with Air Force Regulation 32 CFR 989.8 (d). The Proposed Action is the only alternative that meets the selection criteria and would have no significant adverse effect on the natural or human environment.

Decision

Based on the review of the EA, the Air Force has decided to proceed with the demolition and replacement of water reservoir Buildings 1516, 1518, and 1520. The potential impacts to the human and natural environment have been evaluated relative to the existing environment. For each environmental resource or issue, anticipated direct and indirect effects have been assessed, considering both short-term and long-term project effects.

Only minor, short-term, insignificant impacts would be expected from implementation of the Proposed Action listed in the EA. During construction and operation, the Proposed Action would result in less than significant impacts or no effects to air quality, noise, hazardous materials, hazardous waste, stored fuels, biological resources, land use, cultural resources, transportation systems, airspace/airfield operations, safety and occupational health, environmental management, and environmental justice. During construction, the Proposed Action would provide short-term, socioeconomic benefits through the generation of construction jobs. During operation, the Proposed Action would have a beneficial impact on the water supply because existing reservoir deterioration would be eliminated and water storage capacity would increase.

Overall, the analysis for this EA indicates that the demolition and construction of water reservoir Buildings 1516, 1518, and 1520 as described under the Proposed Action would not result in or contribute to significant negative cumulative or indirect impacts to the resources in the region.

Conclusion

In accordance with the CEQ regulations implementing NEPA and the Air Force Environmental Impact Analysis Process, the Air Force concludes that the Proposed Action will have no significant impact on the quality of the human environment and that the preparation of an environmental impact statement is not warranted.

A copy of the EA was made available for public review at the Fairfield-Suisun Community Library, the Vacaville Public Library, and the Mitchell Memorial Library at Travis AFB from 10 - 24 March 2005. No comments were received from the public.

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SIGNED:



DATE: 30 Mar 05

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Preface

CH2M HILL is performing Architect-Engineering (A-E) Services to support Natural Resource Liability Asset Management (NRLAM) Assessment, Environmental Assessments, and Various Conservation Projects at Travis Air Force Base, California. This work is being conducted under the Air Force Center for Environmental Excellence Contract No. F41624-03-D-8595, Task Order No. 0202 (Project No. AMC204638 and Project No. AMC208892).

Key CH2M HILL project personnel for the Final *Environmental Assessment and Finding of No Significant Impact (FONSI) for the Replacement of Water Reservoirs* at Travis Air Force Base completed under this contract are:

- Tony Jaegel – Regional Project Team Lead
- Karin Lilienbecker – Task Manager
- Christine Roberts – Senior Review
- Ed McCarthy – Project Team Member
- Fawn Elhadidi – Document Coordinator
- Kim Basial – Technical Editor

For quality control purposes, CH2M HILL staff has reviewed this Environmental Assessment and FONSI. The senior reviewer listed below, by virtue of her signature, has concluded that this document meets or exceeds the deliverable requirements set forth in the Statement of Work.



Christine Roberts

March 25, 2005

Date

Executive Summary

Introduction

The U.S. Air Force (Air Force) Air Mobility Command proposes to demolish and replace three water reservoirs, which are concrete storage tanks identified on the Real Property Inventory as Buildings 1516, 1518, and 1520, at Travis Air Force Base (AFB or Base). The purpose of this Environmental Assessment (EA) is to determine whether the Proposed Action would have a significant adverse effect on the quality of the environment. In accordance with Air Force Regulations (Title 32 of the Code of Federal Regulations, Part 989, Environmental Impact Analysis Process), an EA is the appropriate documentation. A Categorical Exclusion is not applicable because the Proposed Action does not meet the criteria for preparing such a document. In addition, an Environmental Impact Statement is not required because impacts potentially resulting from the Proposed Action would not be significant.

Purpose and Need for the Action

The purpose of the Proposed Action is to demolish and replace water reservoir Buildings 1516, 1518, and 1520 at Travis AFB in a manner protective of human health and the environment. The reservoirs are used to store water that is used to meet Travis AFB's potable water needs. The potable water needs at the Base include drinking, washing, and firefighting capacity. The three existing reservoirs were built in the 1940s and 1950s and have reached the end of their functional lives. Travis AFB currently has a drinking water storage capacity of 6.2 million gallons, of which approximately 3.7 million gallons are stored in these three water reservoirs. Another 2.5 million gallons are stored in Building 1512, an adequate reservoir situated adjacent to Building 1520. The following deficiencies are intended to be resolved by the Proposed Action:

- The reservoirs have been cited by the California Department of Health Services for violations of the state Health and Safety Code such as deterioration, lack of overflows, rust, and cracks.
- The existing water storage capacity is deficient based on the Travis AFB Water Master Plan, which requires 10.5 million gallons of water storage at Travis AFB.
- The existing reservoirs could compromise the Base's firefighting capabilities if tank pressure were to fail due to a deteriorating reservoir.

Description of Proposed Alternatives

The alternatives analyzed in this EA are the No Action Alternative and the Proposed Action. Reasonable alternatives for water storage at Travis AFB should accomplish the following in

a cost-efficient and cost-effective manner, with minimal impact to human health and natural resources:

- Meet or exceed state Health and Safety Code requirements for water storage
- Comply with Air Force and Department of Defense planning and design manuals, design standards, and safety requirements for drinking water operations
- Meet the storage requirements of the Base Water Master Plan
- Be environmentally sound and avoid or minimize impacts to natural resources

The No Action Alternative is carried forward for consideration in accordance with Title 32 of the Code of Federal Regulations, Part 989.8(d).

Other options were considered, but were rejected because they did not meet the selection criteria. Replacing the reservoirs in new locations would require constructing extensive interconnections, system controls, and other features that already exist at the current locations. This option would not only involve unnecessary construction, but would also be cost-prohibitive and require more environmental analysis than the Proposed Action.

Dependence on neighboring cities for water supply was considered but rejected because it would be inconsistent with the Base mission, adequate supply could not be secured, and supply availability could not be guaranteed.

The Base Water Master Plan requires 10.5 million gallons of water storage. Travis AFB considered refurbishing the three existing reservoirs to meet this supply requirement but determined that refurbishing was technically infeasible because the reservoirs were too deteriorated. Furthermore, consolidating the reservoirs into one or two reservoirs larger in size than the proposed replacement reservoirs was deemed impractical and not a technically viable option because the proposed reservoirs are the largest used in standard application.

The Proposed Action was the only alternative that met all of the selection criteria.

Alternative 1 – No Action Alternative

Under the No Action Alternative, the three existing water reservoirs would not be replaced and would continue to be used.

Water reservoir Building 1516 is rectangular, concrete, and mostly underground; water reservoir Buildings 1518 and 1520 are round, aboveground concrete tanks. The current combined storage capacity of the three reservoirs is approximately 3.7 million gallons (see Table ES-1). Travis AFB owns the reservoirs, and operates the drinking water distribution system under a state permit.

TABLE ES-1

Dimensions of Existing and Proposed Replacement Water Reservoirs

Environmental Assessment for Replacement of Water Reservoirs, Travis Air Force Base, California

Reservoir	Existing Reservoir		Proposed Replacement	
	Capacity (Gallons)	Dimensions	Capacity (Gallons)	Dimensions
Building 1512	2,500,000	110' in diameter 35' high	Reservoir is sufficient; replacement is not needed	
Building 1516	700,000	156' long 113' wide	3,000,000	122' in diameter 35' high
Building 1518	1,000,000	115' in diameter 15' high	2,000,000	
Building 1520	2,000,000	136' in diameter 23' high	3,000,000	122' in diameter 35' high

Alternative 2 – Proposed Action

The Air Force proposes to demolish and replace the three existing water reservoirs. Replacement of the reservoirs would be in place. Engineering designs have been prepared for the proposed cylindrical, aboveground steel tanks that would replace Buildings 1516 and 1520. Demolition and construction of the reservoirs would be phased to maintain water pressure and volume required for the Base water supply and firefighting capabilities. Tank demolition and construction would be done in the following order: (1) Building 1520, (2) Building 1516, and (3) Building 1518. Water reservoir Buildings 1520 and 1516 would be constructed in 2006 and 2007. Reservoir Building 1518 would be replaced in 2007 or 2008. Tank demolition and construction would take between 8 and 12 months for each tank.

Environmental Consequences

The EA provides the regulatory background, as applicable, for the various environmental resource areas and evaluates potential impacts resulting from demolition, construction and operation of the water reservoirs. The potential impacts to the human and natural environments were evaluated by comparing the Proposed Action to the No Action Alternative. The subsection for each environmental resource or issue assesses the anticipated direct and indirect impacts, considering both short- and long-term effects.

Air Quality

Alternative 1

Under this alternative, construction would not occur and air pollutant emissions would not be generated. Emissions from operations would not change from current conditions.

Alternative 2

The Proposed Action could cause temporary, short-term adverse impacts to air quality as a result of demolition and construction emissions. Impacts from demolition and construction would be localized and limited to the duration of the construction activities. Potential impacts are expected to be less than significant.

The operation of the new reservoirs would be similar to operation of the existing reservoirs. Because there would not be any additional emission sources associated with operation of the new reservoirs, no emissions increases would occur. Therefore, there would be no impact to air quality from operation of the replacement reservoirs.

Noise

Alternative 1

Implementing the No Action Alternative would not result in construction activities. Therefore, no construction noise would occur. Current operational noise levels are not expected to change.

Alternative 2

Water reservoir Building 1518 is closest to housing, approximately 100 feet from the nearest house. Water reservoir Buildings 1516 and 1520 are approximately 300 and 150 feet from the nearest house, respectively. Residential housing located near the Proposed Action would experience an increase in noise from construction. Construction activities would occur during the day, when fewer residents are at home. The increase in noise should be minor and temporary. Construction activities are not expected to result in significant noise impacts.

Other noise-sensitive receptors in the vicinity of the Proposed Actions sites are the Child Development Center, Center Elementary School, and the chapel located in Building 7766. However, because these receptors are relatively long distances from the Proposed Action sites, noise levels are expected to dissipate to levels that are not significantly different from background conditions.

Hazardous Materials, Wastes, ERP Sites, and Stored Fuels

Both project alternatives would generate hazardous and nonhazardous waste. Travis AFB has procedures in place for handling and disposing of wastes, hazardous materials, and fuels. Compliance with waste management procedures would reduce potential impacts to less than significant levels. Neither the current facility locations nor the Proposed Action are located on or near stored fuel locations or ERP sites; therefore, impacts to stored fuel locations or ERP sites are not anticipated.

Alternative 1

Implementation of the No Action Alternative would not result in changes to current waste production or waste management practices.

Alternative 2

The Proposed Action would involve the demolition and replacement of three water storage facilities. The demolition phase of the Proposed Action would generate some waste. Prior to demolition, a recycling plan would be submitted to Environmental Flight to ensure that materials generated during demolition are appropriately recycled. Whenever practicable, materials generated during demolition would be used for the construction of the new water storage tanks. The amount of waste produced during demolition and construction is expected to be less than significant. Compliance with standard waste handling and disposal

guidelines would reduce potential impact from waste handling and disposal to less than significant levels.

All three water storage facilities were constructed prior to 1960 and could contain hazardous materials such as lead-based paint (LBP) or asbestos. LBP and asbestos surveys would be conducted to determine the presence and form of LBP or asbestos associated with the water reservoirs. If LBP or asbestos are present, an abatement plan would be produced that would provide the basis for safe LBP or asbestos abatement. Completion of the LBP and asbestos surveys and subsequent abatement activities would reduce potential impacts from LBP or asbestos at the Proposed Action sites to less than significant levels.

The operation and maintenance practices at the water reservoir buildings would not change if the Proposed Action were implemented.

Water Resources, Floodplains, and Wastewater

Neither of the alternatives is located within the 100-year floodplain (Travis AFB, 2002). Neither of the alternatives would use groundwater or release water in a way that could impact groundwater. No impacts to floodplains, flooding, wastewater, or groundwater are expected from either project alternative.

Alternative 1

If Alternative 1 were selected, no changes to water quality would occur. The three existing water reservoirs would continue to deteriorate. This deterioration could result in significant impacts to the water supply in the future.

Alternative 2

Under Alternative 2, demolition of the existing water reservoirs and construction of replacement reservoirs could result in impacts to the water supply by reducing storage capacity. Demolition would be phased so that only one water tank would be out of service at a time. This phasing would reduce impacts to the water supply during demolition and construction to less than significant levels.

After demolition and construction are complete, the Base would have larger, more reliable water reservoirs. The effects of the Proposed Action would be beneficial, because replacing the reservoirs would eliminate the existing tank deterioration and increase the Base's water storage capacity.

Construction could produce short-term impacts to the surface water ponds and Union Creek from erosion during earth-moving activities. The Base currently has a stormwater permit and a stormwater pollution prevention plan. A dig permit (60 AMW Form 55) would be acquired prior to construction. The project would comply with applicable restrictions set forth in the stormwater permit, the stormwater pollution prevention plan, and the dig permit. Best Management Practices would be implemented in accordance with these permits to prevent erosion. Compliance with the relevant permits and implementation of Best Management Practices would reduce impacts to the surface water ponds and Union Creek from construction activities or stormwater discharges to less than significant levels.

Biological Resources – Federal- and State-listed Threatened or Endangered Species

Alternative 1

The No Action Alternative would not result in any construction or other changes to the physical environment and, therefore, not result in impacts to biological resources.

Alternative 2

There are no wetlands on the reservoir sites. Some wetlands are located near Buildings 1520 and 1516 (Travis AFB 2002a and 2003; CH2M HILL, 2003). However, after field review of wetland vegetative characteristics, it was determined that wetlands near the two reservoirs would not be affected by the Proposed Action. Exclusion fencing and an environmental monitor would be used to keep construction equipment away from these areas. Standard Best Management Practices, such as use of silt fencing, would also be used to avoid impacts to the adjacent wetlands. Therefore, impacts to wetlands would be less than significant.

Surveys conducted in 1991, 1995, 1999, and 2001 to determine the potential presence of special-status flora, fauna, or habitats did not identify any special-status species or their habitats at the Proposed Action sites. Therefore, impacts to special-status species and their habitats would not occur.

Socioeconomic Resources

Alternative 1

Selection of the No Action Alternative would result in no changes to the socioeconomic resources at the Base or in Solano County.

Alternative 2

Implementation of Alternative 2 would result in a temporary, beneficial impact to socioeconomic resources during demolition and construction because it would require a temporary increase of approximately 30 civilian contract employees (construction workers) at the Base. Given the ample supply of construction labor in the region, it is anticipated that construction workers would commute to the work site and would not require temporary housing.

After demolition and construction activities are complete, the Proposed Action would not result in long-term change to socioeconomic conditions when compared to the No Action Alternative. The Proposed Action would not result in changes to onbase or regional populations.

The expenditure of approximately \$8 million for the proposed construction project is minor compared to ongoing construction activities in the region, and would have no appreciable effect on the regional economy.

Cultural Resources

Alternative 1

No cultural resources have been identified at or near water reservoir Buildings 1516, 1518, or 1520. Travis AFB was surveyed for historic places in accordance with Section 110 of the National Historic Preservation Act, and the three reservoirs were not identified as historic (Travis AFB, 2003b). Therefore, no impacts to cultural resources would occur under the No Action Alternative.

Alternative 2

There are no known archeological sites, historic buildings, or other culturally sensitive areas at or adjacent to the proposed sites for Alternative 2. Prior to construction, a dig permit (60 AMW Form 55) would be acquired from the 60th Civil Engineering Squadron Environmental Flight and a contingency plan would be prepared. Because there are no known cultural resources at or near the Proposed Action sites, there would be no effect on this resource from the Proposed Action. If an unexpected cultural resource were encountered, adherence to the dig permit and implementation of the contingency plan would reduce impacts to less than significant levels.

Land Use

Alternative 1

Under the No Action Alternative, demolition of the current water reservoirs and construction of replacement water reservoirs would not occur, and there would be no change to the existing land use.

Alternative 2

According to the *Travis Air Force Base General Plan* land use maps, the existing and future land use designation for the Proposed Action sites are industrial (Travis AFB, 2002). The Proposed Action would not change the land use at the site from existing conditions; therefore, no impact to land use is anticipated from the Proposed Action.

Transportation System

Alternative 1

Under the No Action Alternative, construction of the replacement water reservoirs would not occur and existing facilities would continue to be used. Current traffic levels and patterns would be maintained.

Alternative 2

The roadways affected by the construction traffic, including travel by construction workers in their personal vehicles to the construction site, would be the main Base thoroughfares, Turner Drive and Cannon Drive. According to the *Travis Air Force Base General Plan*, no significant transportation or parking issues are associated with the roadways that would be used to gain access to the Proposed Action sites (Travis AFB, 2002). The water reservoirs would be demolished and constructed in phases so transporting materials would occur

intermittently, as needed. Potential traffic impacts resulting from the Proposed Action would be temporary and less than significant.

Airspace/Airfield Operations

Alternative 1

No change in airspace or airfield operations would result from the No Action Alternative.

Alternative 2

The new water reservoirs would be located outside of airspace or airfield operations areas. Therefore, construction of the Proposed Action would not result in impacts to airspace or airfield operations.

Safety and Occupational Health

Alternative 1

Implementing the No Action Alternative would not change safety or occupational health conditions.

Alternative 2

Implementing the Proposed Action would require demolition of the current facilities and construction of new facilities, involving military and civilian personnel. Implementation of the Proposed Action would follow all applicable rules and regulations regarding safety and occupational health. A health and safety plan for construction would be prepared that would include requirements such as shoring for excavations. LBP and asbestos surveys would be completed prior to construction. If LBP or asbestos were discovered, an approved abatement plan would be adopted that would detail the precautions necessary to protect worker health and safety. Construction areas would be secured as necessary to prevent unauthorized personnel from entering the work sites or excavations.

In accordance with the Occupational Safety and Health Act, workers would be provided with appropriate personal protective equipment, including required traffic safety equipment. The potential for adverse impacts to safety and occupational health are expected to be minor and limited to the duration of construction.

Impacts to public health from operation of the reservoirs are not anticipated.

Environmental Management (Including Geology, Soils, and Pollution Prevention)

Alternative 1

There would be no change to geology, soils, or pollution prevention if the No Action Alternative were implemented.

Alternative 2

No important geological or soil resources are present in the area of the Proposed Action. Construction of Alternative 2 would temporarily disturb soils during demolition and

construction. No rare or valuable soils would be disturbed. Therefore, potential impacts to geology or soils associated the Proposed Action would be less than significant.

Implementation of the Proposed Action would comply with the overall objectives of the pollution prevention program at Travis AFB. Although construction and demolition of the facilities would produce some waste in the form of construction debris, measures to prevent pollution would be taken. A recycling plan would be completed before demolition or construction began. If recycling were not possible or feasible, the waste would be disposed of in accordance with applicable regulations and policies. Generation and management of waste during demolition and construction are expected to meet the pollution prevention goals set in the Travis AFB Pollution Prevention Management Action Plan.

Waste production during operation of the new water reservoirs would be equal to the current levels and, therefore, not be affected by the Proposed Action.

Environmental Justice

Alternative 1

Implementation of the No Action Alternative would not affect minority or low-income populations, or children.

Alternative 2

No minority or low-income populations in the surrounding area would be affected by the construction of the Proposed Action. In addition, the Proposed Action would not cause any adverse impacts with the potential to disproportionately affect such populations if they were present.

The land adjacent to the Proposed Action sites is classified as residential housing and includes family housing. The construction sites, excavations, and materials would be properly secured during construction to prevent children from accessing the sites. Securing the sites during construction would reduce any danger to children to less than significant levels.

Implementation of the Proposed Action would not result in impacts to minority populations or the health or safety of children.

Indirect and Cumulative Impacts

Implementing the Proposed Action is not expected to result in significant indirect impacts to environmental or socioeconomic resources. The Proposed Action would not result in significant growth-inducing effects, induced changes in population, or related effects.

Projects considered for cumulative impacts in the EA are those that are ongoing or planned to begin within the next 3 years at Travis AFB. Projects being considered beyond 3 years are too uncertain to be evaluated. Alternative 1, the No Action Alternative, would have no potential for cumulative impacts.

The potential for cumulative impacts attributable to air quality would be from multiple construction projects occurring simultaneously. The Proposed Action would conform to the State Implementation Plan and not be regionally significant. Provided that the planned projects are not constructed simultaneously, the State Implementation Plan measures for

each project would be sufficient to prevent any significant cumulative impacts from construction activities.

Earth-moving activities associated with multiple construction projects occurring simultaneously could impact water resources by decreasing the quality of surface water runoff during storm events. Travis AFB currently has a basewide stormwater permit and a basewide Stormwater Pollution Prevention Plan. Impacts from multiple actions would be addressed and reduced to less than significant levels by adhering to the basewide permits and programs that are currently in place.

The stormwater drainage system and the sanitary sewer system are inadequate for current Base needs. Future actions would put additional strain on both systems. The Base has conducted studies to define system deficiencies and is developing remedial measures. The Proposed Action would not put any further strain on the stormwater or sanitary sewer systems; therefore, there would be no cumulative impacts to those systems from this action.

Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are expected from construction or operation of the water reservoirs under the Proposed Action Alternative.

Relationship between Short-term Uses and Enhancement of Long-term Productivity

The three reservoirs store water that is used to meet the potable water needs of Travis AFB. The potable water needs at the Base include drinking, washing, and firefighting capacity. The purpose of the Proposed Action is to construct water reservoirs that are adequate to meet California Health and Safety Code requirements, the storage requirements of the Travis AFB Water Master Plan, and the potable water needs of Base operations. The existing water reservoirs are deteriorating and detract from Base operations because they are not adequate for Base needs. The problems associated with the existing water reservoirs (e.g., inadequate water storage capacity) would be exacerbated in the short term because each reservoir would have to be demolished before it could be replaced. Replacement of the water reservoirs as outlined in the Proposed Action would alleviate the problems associated with the existing reservoirs, enhancing the long-term productivity.

Irreversible and Irretrievable Commitment of Resources

The demand for electricity for security lighting and pumping water from the tanks would be identical to current needs. Therefore, the need for additional resources is not expected during long-term use of the water reservoirs.

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Acronyms and Abbreviations

µg/m ³	micrograms per cubic meter
Air Force	U.S. Air Force
AFB	Air Force Base
AFI	Air Force Instruction
AST	aboveground storage tank
BAAQMD	Bay Area Air Quality Management District
Base	Travis Air Force Base
Basin	San Francisco Bay Area Air Basin
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CEQ	President's Council on Environmental Quality
CES/CEV	Civil Engineering Squadron Environmental Flight
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CWA	Clean Water Act
dB	decibel(s)
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERP	Environmental Restoration Program
ft ²	square feet
LBP	lead-based paint
mgd	million gallons per day
NAAQS	National Ambient Air Quality Standards

NEPA	National Environmental Policy Act
NO _x	nitrogen oxide
PM ₁₀	particulate matter less than 10 microns
PM _{2.5}	particulate matter less than 2.5 microns
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
SIP	State Implementation Plan
SO ₂	sulfur dioxide
tpy	tons per year
Travis AFB General Plan	Travis Air Force Base General Plan
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
UST	underground storage tank
VOC	volatile organic compound

Purpose of and Need for the Proposed Action

1.1 Introduction

The U.S. Air Force (Air Force) Air Mobility Command at Travis Air Force Base (AFB or Base) in Fairfield, California (see Figure 1-1; figures are located at the end of each section), proposes to replace three water reservoirs, which are concrete storage tanks identified on the Real Property Inventory as Buildings 1516, 1518, and 1520. These reservoirs were built in the 1940s and 1950s and are deteriorating. The combined volume of the tanks is approximately 3.7 million gallons.

The three reservoirs are used to store water to meet the potable water needs of Travis AFB. The potable water needs at the Base include drinking, washing, and firefighting capacity. Each water reservoir will be demolished and replaced at the existing location. The water reservoirs will be replaced sequentially to prevent potable water shortages at the Base.

Travis AFB, with the support of Air Mobility Command and the Air Force Center for Environmental Excellence, has prepared this environmental assessment (EA) in accordance with National Environmental Policy Act (NEPA) implementing regulations 40 Code of Federal Regulations (CFR) 1500 through 1508, Air Force Regulation 32 CFR 989, and Department of Defense directives. This EA has been prepared to determine whether the Proposed Action would have a significant adverse effect on the quality of the environment.

1.2 Need for the Action

The purpose of the Proposed Action is to provide drinking water storage for Travis AFB in a manner protective of human health and the environment. The existing reservoirs were built in 1944 and 1952, and have reached the end of their functional lives. Travis AFB currently has a drinking water storage capacity of 6.2 million gallons, of which approximately 3.7 million gallons are stored in the existing water reservoir Buildings 1516, 1518, and 1520 (see Figure 1-2). Another 2.5 million gallons are stored in Building 1512, a reservoir built in 1996 that is adjacent to Building 1520. The following deficiencies are intended to be resolved by the Proposed Action:

- The reservoirs have been cited by the California Department of Health Services for violations of the state Health and Safety Code, such as deterioration, lack of overflows, rust, and cracks.
- The existing water storage capacity is deficient based on the Travis AFB Water Master Plan, which requires 10.5 million gallons of water storage at Travis AFB.
- The existing reservoirs could compromise the Base's firefighting capabilities if tank pressure were to decrease due to a deteriorating reservoir.

1.3 Objectives of the Action

The objectives for the action are to replace the existing, deteriorating water reservoir Buildings 1516, 1518, and 1520 with new, larger steel reservoirs designed to meet state environmental and health and safety requirements for drinking water storage. In addition, replacing these tanks would increase the water storage capacity at Travis AFB to 10.5 million gallons, as required in the Base Water Master Plan.

1.4 Location of Proposed Action

Travis AFB is located near the City of Fairfield, in Solano County, and extends over approximately 5,128 acres (see Figure 1-1). The Base is located off Interstate 80, approximately midway between Sacramento and San Francisco and 7 miles northeast of central Fairfield.

The Proposed Action is located in the northern portion of the Base. Reservoir Building 1516 is located north of Twin Peaks Drive, Reservoir Building 1518 is located north of Tunner Drive, and Building 1520 is located south of Valley View Way (see Figure 1-2).

1.5 Scope of the Environmental Assessment

This EA documents and analyzes the potential environmental and socioeconomic effects associated with the Proposed Action relative to the No Action condition.

1.6 Decision(s) that Must be Made

The Chairman of the Environmental Protection Committee at Travis AFB is responsible for selecting an alternative to improve water storage. A decision to take No Action (Alternative 1) would maintain the three existing water reservoirs. A decision to take action (Alternative 2) would result in Travis AFB proceeding with the proposed replacement of the three water reservoirs.

1.7 Applicable Regulatory Requirements and Required Coordination

This environmental analysis has been conducted in accordance with the President's Council on Environmental Quality (CEQ) regulations, 40 CFR Sections 1500 through 1508, as they implement the requirements of NEPA, 42 U.S. Code (USC) Sections 4321 et seq., and Air Force Regulation 32 CFR 989, The Environmental Impact Analysis Process. Air Force Regulation 32 CFR 989 specifies the procedural requirements for the implementation of NEPA and preparation of an EA, and directs Air Force officials to consider environmental consequences as part of the planning and decisionmaking process.

Other environmental regulatory requirements relevant to the Proposed Action and alternative are also identified in this EA. Regulatory requirements under the following programs, among others, are assessed:

- Noise Control Act of 1972
- Federal Clean Air Act (CAA)
- Clean Water Act (CWA)
- National Historic Preservation Act
- Archaeological Resources Protection Act
- Endangered Species Act of 1973
- Resource Conservation and Recovery Act (RCRA)
- Comprehensive Environmental Restoration, Compensation, and Liability Act
- Toxic Substances Control Act of 1970
- Occupational Safety and Health Act

Requirements also include compliance with Executive Order (EO) 11988 (Floodplain Management); EO 11990 (Protection of Wetlands); EO 12898 (Federal Actions to Address Environmental Justice in Minority and Low-Income Populations); and EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks).

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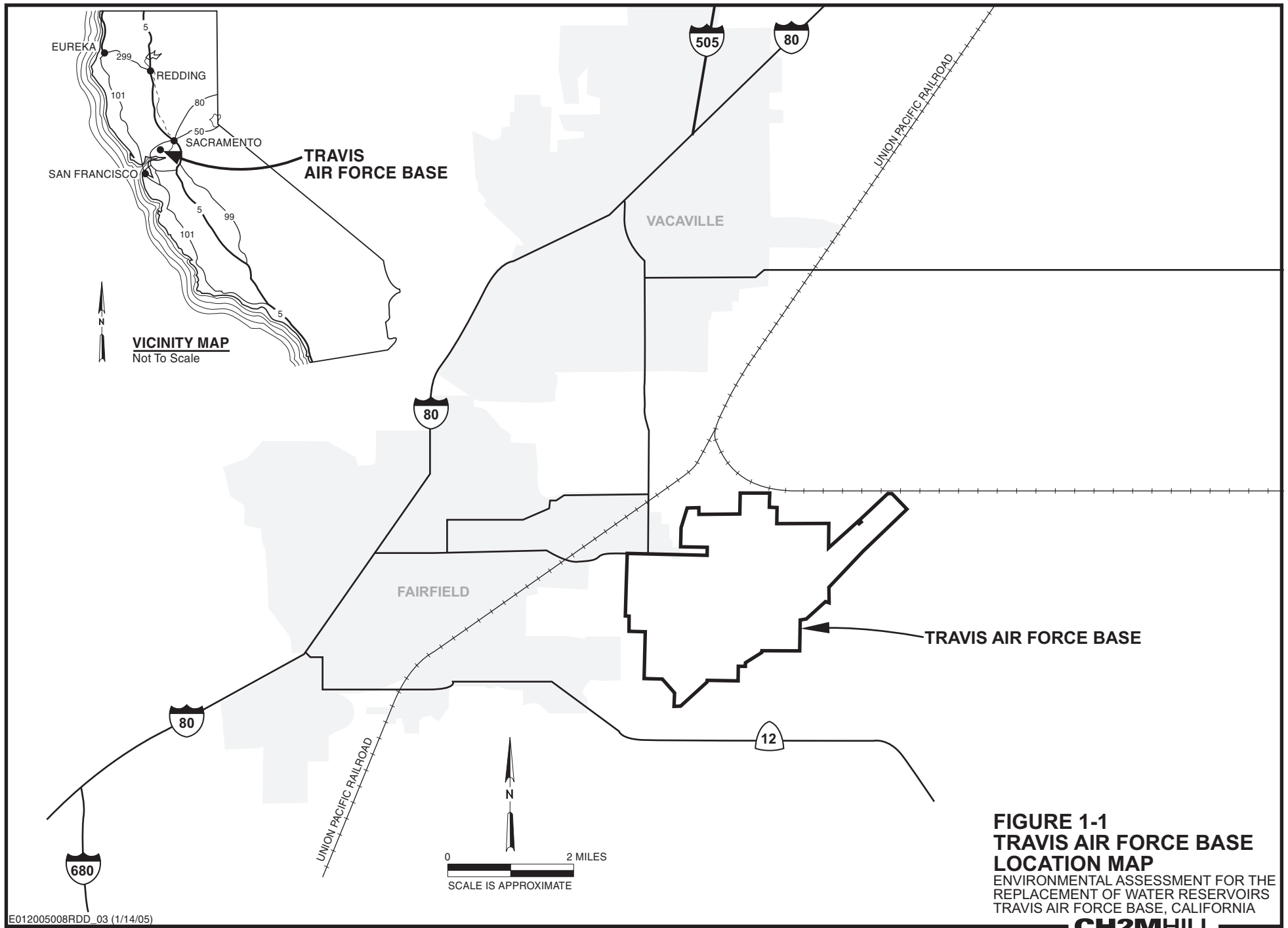
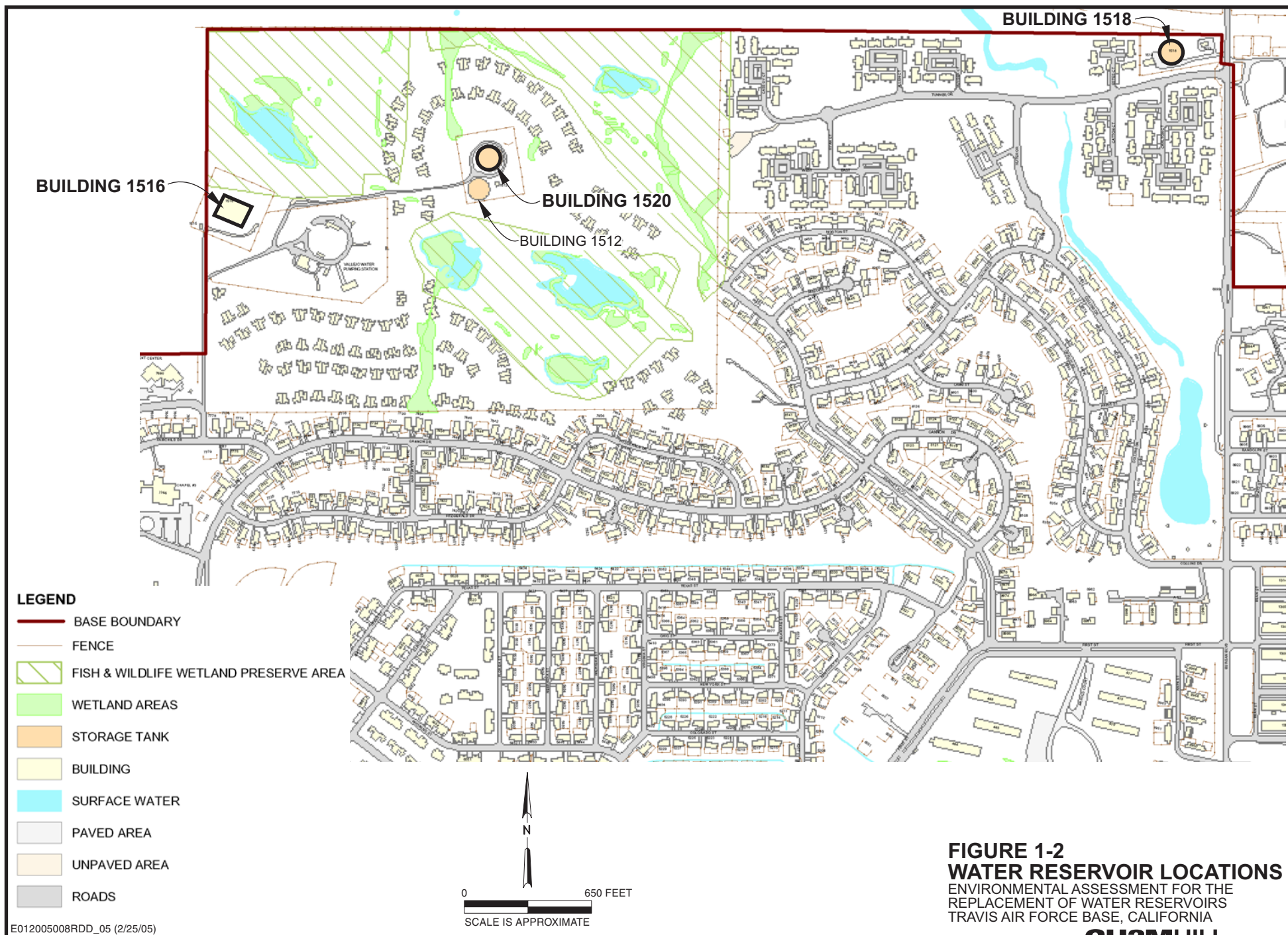


FIGURE 1-1
TRAVIS AIR FORCE BASE
LOCATION MAP
ENVIRONMENTAL ASSESSMENT FOR THE
REPLACEMENT OF WATER RESERVOIRS
TRAVIS AIR FORCE BASE, CALIFORNIA
CH2MHILL



Description of the Alternatives, Including the Proposed Action

2.1 Introduction

This section presents the criteria for selecting the alternatives considered in this EA and describes the alternatives carried forward for detailed analysis.

2.2 Selection Criteria for Alternatives

Reasonable alternatives for water storage at Travis AFB should accomplish the following in a cost-efficient and cost-effective manner, with minimal impact to human health and natural resources:

- Meet or exceed state Health and Safety Code requirements for water storage
- Comply with Air Force and Department of Defense planning and design manuals, design standards, and safety requirements for drinking water operations
- Meet the storage requirements of the Base Water Master Plan
- Be environmentally sound and avoid or minimize impacts to natural resources

2.3 Alternatives Considered but Eliminated from Detailed Study

No alternatives other than the No Action and the Proposed Action are included for analysis in this EA. Other options were considered, but were rejected because they did not meet the selection criteria. Replacing the reservoirs in different locations would require constructing extensive interconnections, system controls, and other features that already exist at the current locations. This option would not only involve unnecessary construction (because the features already exist), but also be cost-prohibitive and require more environmental analysis than the Proposed Action.

Dependence on neighboring cities for water supply needs was considered but rejected because it would be inconsistent with the Base mission, adequate supply could not be secured, and supply availability could not be guaranteed.

The Base Water Master Plan requires 10.5 million gallons of water storage. Travis AFB considered refurbishing the three existing reservoirs to meet this supply requirement, but determined that refurbishing was technically infeasible because the existing reservoirs were too deteriorated. Furthermore, consolidating the three reservoirs into one or two reservoirs larger in size than the proposed replacement reservoirs was deemed impractical and not a

technically viable option because the proposed reservoirs are the largest used in standard application.

The Proposed Action was the only alternative that met all of the selection criteria.

2.4 Description of Proposed Alternatives

2.4.1 Alternative 1 – No Action

Under the No Action Alternative, water reservoir Buildings 1516, 1518, and 1520 would not be replaced and the existing reservoirs would continue to be used.

Travis AFB owns the three drinking water storage reservoirs (see Figure 2-1). Water reservoir Building 1516 is rectangular, concrete, and mostly underground, and water reservoir Buildings 1518 and 1520 are round, aboveground concrete tanks. Their combined storage capacity is approximately 3.7 million gallons. The City of Vallejo owns and operates only the water treatment plant. Travis AFB owns the reservoirs, and operates the drinking water distribution system under a state permit.

2.4.2 Alternative 2 – Proposed Action

The Air Force proposes to replace the three existing water reservoirs (see Table 2-1). Replacement of the reservoirs would be in place and is programmed to begin in fiscal year 2006. The treatment systems are not included in this project.

The current tanks would be demolished. The concrete and metal recovered would be recycled, and nonrecyclable materials would be disposed of in appropriate facilities, in accordance with Air Force Instructions (AFI) and Base guidelines.

Engineering designs have been prepared for the proposed cylindrical, aboveground steel tanks that would replace water reservoir Buildings 1516 and 1520. Demolition and construction of the reservoirs would be phased to ensure water pressure and volume required for the Base supply and to maintain fire-fighting capabilities. Tanks would be demolished and constructed in the following order: (1) Building 1520, (2) Building 1516, and (3) Building 1518. Reservoir Buildings 1520 and 1516 would be constructed in 2006 and 2007. Reservoir Building 1518 would be replaced in 2007 or 2008. Tank demolition and construction would take between 8 and 12 months for each tank.

TABLE 2-1

Dimensions of Existing and Proposed Replacement Water Reservoirs

Environmental Assessment for Replacement of Water Reservoirs, Travis Air Force Base, California

Reservoir	Existing Reservoir		Proposed Replacement	
	Capacity (Gallons)	Dimensions	Capacity (Gallons)	Dimensions
Building 1512	2,500,000	110' in diameter 35' high	Reservoir is sufficient; replacement is not needed	
Building 1516	700,000	156' long 113' wide	3,000,000	122' in diameter 35' high
Building 1518	1,000,000	115' in diameter 15' high	2,000,000	
Building 1520	2,000,000	136' in diameter 23' high	3,000,000	122' in diameter 35' high

2.5 Description of Past and Reasonably Foreseeable Future Actions Relevant to Cumulative Impacts

This EA identifies actions that have been conducted in the past, are ongoing or in the planning stages, and will be conducted in relation to the Proposed Action. Details of actions that have the potential to interact with the Proposed Action are included in Section 4.15, Indirect and Cumulative Impacts.

2.6 Identification of Preferred Alternative

The Air Force's Preferred Alternative for this EA is the Proposed Action as described in Section 2.4.2, Alternative 2. This alternative best meets the selection criteria.

2.7 Comparison of the Environmental Impacts of Alternatives

Table 2-2 compares the environmental effects of the alternatives described above.

TABLE 2-2

Summary of Potential Environmental and Socioeconomic Consequences

Environmental Assessment for Replacement of Water Reservoirs, Travis Air Force Base, California

Resource	Environmental and Socioeconomic Consequences ^a	
	Alternative 1 No Action	Alternative 2 Proposed Action
Air Quality	No effect	Less than significant (construction); no effect (operation)
Noise	No effect	Less than significant (construction); no effect (operation)
Hazardous Materials, Wastes, ERP Sites, and Stored Fuels		
Hazardous Materials	No effect	Less than significant (construction); no effect (operation)
Wastes	No effect	Less than significant (construction); no effect (operation)
ERP Sites	No effect	No effect
Stored Fuels	No effect	No effect
Water		
Water Supply	Significant	Less than significant (construction); beneficial (operation)
Water Quality	No effect	Less than significant (construction); no effect (operation)
Flooding	No effect	No effect
Wastewater	No effect	No effect
Biological		
Vegetation and Wildlife	No effect	No effect
Federal- and State-listed Threatened or Endangered Species	No effect	No effect

TABLE 2-2

Summary of Potential Environmental and Socioeconomic Consequences

Environmental Assessment for Replacement of Water Reservoirs, Travis Air Force Base, California

Resource	Environmental and Socioeconomic Consequences ^a	
	Alternative 1 No Action	Alternative 2 Proposed Action
Wetlands	No effect	Less than significant (construction); no effect (operation)
Socioeconomic	No effect	Short-term, beneficial (construction); no effect (operation)
Cultural	No effect	No effect
Land Use	No effect	No effect
Transportation Systems	No effect	Less than significant (construction); no effect (operation)
Airspace/Airfield Operations	No effect	No effect
Safety and Occupational Health	No effect	Less than significant (construction); no effect (operation)
Environmental Management		
Pollution Prevention	No effect	Less than significant (construction); no effect (operation)
Geology and Soils	No effect	Less than significant (construction); no effect (operation)
Environmental Justice	No effect	Less than significant (construction); no effect (operation)
Indirect and Cumulative Impacts	No effect	Less than significant (construction); no effect (operation)

^aUnder Alternative 1, construction would not take place and, therefore, there would be no effects from construction. Impacts indicated are associated with operation. Unless otherwise noted, all effects listed for Alternative 2 apply to both construction and operation. Effects are compared to the No Action Alternative.

Note:

ERP = Environmental Restoration Program



BUILDING 1516



BUILDING 1518



BUILDING 1520

BUILDING 1512

FIGURE 2-1
EXISTING WATER RESERVOIRS
 ENVIRONMENTAL ASSESSMENT FOR THE
 REPLACEMENT OF WATER RESERVOIRS
 TRAVIS AIR FORCE BASE, CALIFORNIA
CH2MHILL

Affected Environment

3.1 Introduction

This section presents specific information about the environment at Travis AFB that could be adversely affected as a result of implementing the Proposed Action. Potential impacts resulting from the Proposed Action are described in detail in Section 4.0.

3.2 Air Quality

Travis AFB is located in central Solano County, which is at the eastern edge of the San Francisco Bay Area Air Basin (Basin). The Basin extends from Napa County in the north to Santa Clara County in the South. The Basin encompasses 5,340 square miles and 19 percent of California's population. The Basin is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), pursuant to a mandate from the California Air Resources Board (CARB).

The purpose of this section is to provide an overview of regional air quality. The information presented in this section includes a discussion of existing meteorological and topographical conditions, applicable federal and state regulations, regional air quality management programs, and the current air quality conditions. Only the golf course at Travis AFB extends into a neighboring jurisdiction, the Yolo-Solano Air Pollution Control District.

3.2.1 Regional Climate

California has a Mediterranean climate, with wet winters and dry summers. Although Travis AFB is not located near the coast, it is located near the Carquinez Strait, a major break in the Coast Range that allows the ocean to moderate temperatures at Travis AFB. The Base usually experiences mild temperatures; the mean annual temperature is 60 degrees Fahrenheit. The lowest temperatures occur in January, with a mean of 46 degrees Fahrenheit. The highest temperatures occur in July and August, with a mean of 72 degrees Fahrenheit. Monthly mean relative humidity typically ranges from a low of 50 percent in June to a high of 77 percent in January. The mean annual relative humidity is 60.5 percent. Precipitation is approximately 17 inches per year.

During the late summer and early fall months, Travis AFB is subject to marine air flowing from high pressure cells offshore toward low pressure in the Central Valley. Winds tend to flow from the west, range from 15 to 20 miles per hour, and are typically strongest in the afternoon. The Base occasionally experiences easterly winds generated in the Central Valley. Winds from the Central Valley tend to have higher pollutant loads.

3.2.2 Current Air Quality Conditions

The Basin has been assessed for compliance with California and National Ambient Air Quality Standards (CAAQS and NAAQS, respectively). Three air quality designations can be given to an area for a particular pollutant, as follows:

- **Nonattainment:** This designation applies when air quality standards have not been consistently achieved.
- **Attainment:** This designation applies when air quality standards have been achieved.
- **Unclassified:** This designation applies when there are not enough monitoring data to determine whether the area is in nonattainment or attainment.

According to CARB, the Basin is nonattainment for state standards for ozone, particulate matter less than 10 microns (PM₁₀, or fugitive dust, and particulate matter less than 2.5 microns (PM_{2.5}). Relevant ambient air quality standards are listed in Table 3-1, along with their respective attainment status. The Basin is attainment for nitrogen oxide (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), sulfate particulates, and lead particulates. By federal standards, the Basin is also nonattainment for 1-hour and 8-hour ozone. All other criteria pollutants are designated attainment or unclassified. In Addition, the urbanized areas of Solano County (which include the area occupied by Travis AFB) are maintenance areas for CO under the *Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas* (CARB, 1998). Table 3-2 lists maximum pollutant levels and days the CAAQS were exceeded from 1996 through 2002.

TABLE 3-1

Bay Area Air Quality Management District Attainment Status as of November 2004

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California

Pollutant	Averaging Time	California		Federal	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	8 Hour	—		0.08 ppm	N (Marginal)
	1 Hour	0.09 ppm	N	0.12 ppm	N (Other) ^a
CO	8 Hour	9.0 ppm	A	9.0 ppm	A (M)
	1 Hour	20.0 ppm	A	35.0 ppm	A (M)
Nitrogen Dioxide	Annual	—	—	0.053 ppm	A
	1 Hour	0.25 ppm	A	—	—
SO ₂	Annual	—	—	0.03 ppm	A
	24 Hour	0.04 ppm	A	0.14 ppm	A
	1 Hour	0.25 ppm	A	—	—
PM ₁₀	Annual Geometric Mean	20 µg/m ³	N	50 µg/m ³	A ^a
	24 Hour	50 µg/m ³	N	150 µg/m ³	U
PM _{2.5}	Annual Arithmetic Mean	12 µg/m ³	—	15 µg/m ³	U
	24 Hour	—	—	65 µg/m ³	U

^aAnnual arithmetic mean

Notes:

N = Nonattainment

A = Attainment

U = Unclassified

ppm = parts per million

µg/m³ = micrograms per cubic meter

— = not applicable

Travis AFB is within the jurisdiction of the BAAQMD. Permits have been issued for approximately 130 stationary point sources, such as incinerator exhaust ports, and for more than 250 mobile point sources, such as portable gasoline generators (Travis AFB, 2002a). Approximately 110 sources have been declared exempt. None of the air sources has resulted in adverse impacts to on- or offbase resources (Travis AFB, 2003a). Compliance with BAAQMD standards and practices is detailed in the *Travis Air Force Base General Plan* (Travis AFB General Plan) (Travis AFB, 2002a).

TABLE 3-2

San Francisco Bay Area Air Basin Exceedances of the State Ambient Air Quality Standards 1996 through 2002
Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California

Year	Ozone ^a		CO ^b		PM ₁₀ ^c	
	Number of Exceedance Days	Maximum 1-Hour Concentration (ppm)	Number of Exceedance Days	Maximum 1-Hour Concentration (ppm)	Number of Exceedance Days	Maximum 24-Hour Concentration (µg/m ³)
1996	34	0.138	0	8.8	18	76
1997	8	0.114	0	10.7	20	85
1998	29	0.147	0	8.7	25	100
1999	20	0.156	0	9.0	63	117
2000	12	0.152	0	9.8	42	80
2001	15	0.134	0	7.6	51	114
2002	16	0.160	0	7.7	30	84

^aThe sampling frequency of ozone is continuous (hourly). The CAAQS for ozone is 0.09 ppm.

^bThe sampling frequency of CO is continuous (hourly). The 1-hour CAAQS for CO is 20 ppm.

^cSampling of PM₁₀ is scheduled throughout the project area once every 6 days (24-hour sample). Therefore, each station has nominally 60 sampling days per year. All stations have the same schedule; that is, they all attempt to sample for PM₁₀ on the same days. The number of station sampling days per county would depend on the number of PM₁₀ stations in the county. The 24-hour CAAQS for PM₁₀ is 50 µg/m³. Comparisons with the newly adopted annual PM₁₀ and PM_{2.5} standards have not been made because the standards are new.

Source: CARB, 2004

Note:

Conc. = Concentration

Ozone

Attainment of the NAAQS for ozone in the Basin has remained relatively uniform over the last decade. Exceedances are generally attributed to unique meteorological patterns, combined with increases in emissions during the summer months. Urban vehicular emissions, industrial emissions, and high ambient temperatures in the Basin contribute to summer ozone generation and subsequent air standard violations.

In Solano County, CAAQS have been exceeded each year from 1996 through 2002. Peak hourly average ozone concentrations ranged from 0.096 to 0.129 ppm during this time. In 2003, the peak 1-hour ozone concentration was 0.101 ppm, measured by the BAAQMD at the Tuolumne Street monitoring station in Vallejo, approximately 20 miles southwest of the Base. The air monitoring station closest to the Base is the Chadbourne Road facility in Fairfield, located approximately 10 miles to the west, also operated by the BAAQMD. No exceedances of the ozone standard were recorded at the Chadbourne Road facility in 2003.

Fugitive Dust

Fugitive dust (PM₁₀) is generated within the area from combustion sources and wind during dry conditions (CARB, 2001). PM₁₀ levels are elevated during the winter (attributable to stable conditions and low mixing heights) because of wood smoke, vehicle exhaust, and dry, windy conditions. In 2002, the maximum 24-hour PM₁₀ concentration (monitored since 2001) within Solano County was 84 µg/m³. Federal 24-hour PM₁₀ concentrations have been monitored in Solano County since 1994. The 24-hour PM₁₀ NAAQS have not been exceeded since monitoring began.

3.2.3 Indoor Air Quality

Beginning in 1998, basewide studies were conducted to identify sources of radon emissions. A total of 35 locations were screened. All radon measurements were below the criteria for determining whether a detailed assessment would be required (4 picocuries per liter). Based on these studies, no further evaluation is required (Travis AFB, 2002a).

3.3 Noise

The Air Force typically uses the Air Installation Compatible Use Zone guidelines to promote compatible land use development. Noise is one consideration to be addressed under Air Installation Compatible Use Zone and accordingly, Travis AFB has assessed noise levels in relation to the flightline. The descriptor of noise typically used in California is the Community Noise Equivalent Level (CNEL). The CNEL is the average sound energy level for a 24-hour day determined after the addition of a 5-decibel (dB) penalty to noise generated between 7:00 and 10:00 p.m. and a 10-dB penalty to noise events occurring at night between 10:00 p.m. and 7:00 a.m. The CNEL is calculated using the sound energy generated by individual noise events, the number of events occurring during a 24-hour period, and the time of day at which the events occur.

Maximum CNELs in excess of 80 decibels (dB) are produced during flight operations. These noise levels are intermittent and localized to the flightline. The majority of the Base experiences CNELs ranging from 60 to 75 dB. Some activities on the Base produce noise levels in excess of the CNELs produced by flight operations. Noise levels near the Proposed Action sites are approximately 60 dB.

The Proposed Action is located on land that is classified as industrial. Land adjacent to the of the Proposed Action sites is classified as residential housing and includes family housing. Other noise-sensitive receptors in the vicinity of the Proposed Action include the Child Development Center, Center Elementary School, and a chapel located in Building 7766. No other sensitive receptors are located within 1,500 feet of the Proposed Action.

3.4 Hazardous Materials, Waste, Environmental Restoration Program Sites, and Stored Fuels

3.4.1 Hazardous Materials and Hazardous Waste

Activities conducted at Travis AFB that use the majority of hazardous materials include maintenance of aircraft, transportation equipment, and facilities. These activities contribute approximately 95 percent of the total volume of hazardous waste generated at the Base, including flammable solvents, contaminated fuels and lubricants, stripping chemicals, waste oils, waste paint, absorbent materials, chemicals stored beyond their expiration dates, and asbestos (Travis AFB, 2002a). Hazardous materials are ordered, stored, and used in accordance with the Base Hazardous Materials Management Plan.

The Base maintains and implements Hazardous Waste Management Plan to comply with RCRA, state, and Air Force regulations. The Hazardous Waste Management Plan establishes the procedures, training requirements, inspections, and record management processes for hazardous waste (Travis AFB, 1999). The Base has one facility, Building 1365, permitted for long-term storage of hazardous waste. Building 1365 is managed by the 60th Civil Engineering Squadron Environmental Flight (CES/CEV) and operated by contractors (Travis AFB, 2002a).

The water reservoirs could contain lead-based paint (LBP) and/or asbestos, because both products were widely used during the time that the water reservoirs were constructed. Exposure to LBP or asbestos has been proven to be hazardous to human health. It is not known at this time whether any of the water reservoirs contain LBP and/or asbestos.

3.4.2 Solid Waste

Nonhazardous waste generated at Travis AFB during fiscal year 2001 totaled 45.5 tons per day (16,600 tons for the year), including both recycled waste and waste sent to a disposal facility. The amount of recycled waste, which includes composting, mulching, recycled, reused, donated, and concrete (construction/demolition) waste, averaged approximately 20 tons per day (7,470 tons for the year). The amount of nonhazardous waste sent to a disposal facility averaged approximately 25 tons per day (9,150 tons for the year) (Travis AFB, 2002a). Nonhazardous solid wastes and refuse at Travis AFB are collected and disposed of by Solano County Garbage Company. Some organic matter is incinerated onbase at one of two incinerators. All solid waste is disposed of in accordance with the Solid Waste Management Plan.

3.4.3 Environmental Restoration Program Sites

Travis AFB has several environmental cleanup sites. The Base has implemented the ERP, administered by the 60 CES/CEV Restoration Section, to remediate all accident, disposal, and spill sites that might pose a potential threat to human health and welfare or the environment. ERP sites include former landfills, spill areas, waste disposal sites, drum storage areas, underground storage tanks (UST) and piping, waste treatment plants, and munitions disposal sites. Some ERP sites have had extraction and remediation systems installed to facilitate cleanup (Travis AFB, 2003a).

3.4.4 Stored Fuels

Fuel is stored onbase in USTs and aboveground storage tanks (AST). Fuel is supplied to the flightline using a hydrant system that is supplied by seven bulk ASTs with a capacity of almost 7 million gallons. The hydrant fueling system is also associated with 21 USTs and 2 smaller ASTs, with a combined capacity of almost 19 million gallons (Travis AFB, 2002a).

Gasoline and diesel fuel used for military vehicles and ground equipment are stored in both ASTs and USTs in various locations at the Base. Thirty USTs are currently in use and regulated by the California UST program. Activities for removal and/or replacement of 20 USTs are being conducted under the Solano County and State of California UST programs. There are also 38 deferred/exempt USTs at the Base (Travis AFB, 2002a).

3.5 Water Resources, Floodplains, and Wastewater

This section provides a description of the drinking water supply, groundwater and surface water resources, floodplains, and wastewater at Travis AFB.

3.5.1 Water Supply

Travis AFB obtains the majority of its drinking water supply from the City of Vallejo. The city is contracted to supply water via the North Bay Aqueduct to the city-owned and operated Travis AFB Water Treatment Plant, which has a treatment capacity of 6 million gallons per day (mgd). The water delivered through the North Bay Aqueduct is drawn from the Sacramento River Delta. Deliveries might be limited in dry years to protect the spawning habitat of the Delta smelt, a federally and state-listed endangered species. The water is filtered, fluoridated, and chlorinated at the treatment plant. Three offbase wells also provide water to the Base. The pipeline conveying the water from the wells to the Base can deliver approximately 3.3 mgd. The pumped water is fluoridated and chlorinated at the wellhead. The drinking water storage and treatment systems are operated under a permit (No. 74-029) issued by the Department of Health Services. The permit was renewed in 1998.

The combined water storage capacity at Travis AFB is 6.2 million gallons. Approximately 3.7 million gallons are stored in reservoir Buildings 1516, 1518, and 1520. Another 2.5 million gallons are stored in Building 1512, a reservoir situated adjacent to Building 1520. Additional storage tanks are located at the David Grant Medical Center (600,000-gallon capacity), and four deluge tanks with a total capacity of 1.45 million gallons are dedicated for firefighting at the aircraft hangars. Water is distributed onbase through water mains ranging from 12 to 24 inches in diameter.

A Drinking Water Master Plan was prepared in 1998 that concluded that the overall Travis AFB water system is adequate for meeting existing needs under normal conditions. However, the system would not be adequate during times of emergency demand (e.g., firefighting or when the City of Vallejo could not meet supply demands).

3.5.2 Groundwater

The depth to unconfined groundwater aquifers in Travis AFB varies seasonally from approximately 12 to 30 feet below ground surface. Intensive extraction of groundwater does not occur at Travis because of poor water-bearing subsurface geology. Intensive extraction

occurs west of Travis AFB and Fairfield, where the alluvium is thicker and contains a greater abundance of coarse-grained sediment. Groundwater wells in the area of Travis AFB are limited to domestic, stock-watering, and irrigation wells with typical screened depths within 100 feet of ground surface (CH2M HILL, 2001). Domestic wells, several of which are downgradient from Travis AFB, are typically used to provide water to households for domestic use (CH2M HILL, 2001). Solano County does not supply water to the residences surrounding Travis AFB. The two nearest domestic wells are within 1,700 feet of the south boundary of Travis AFB.

Onbase wells are not used for potable water production. However, several wells located 4 miles north of Travis AFB, at the Cypress Lakes Golf Course (Annex 10), produce 400 to 500 million gallons of water per year. The well water is mixed with surface water purchased from the City of Vallejo to supply potable water to Travis AFB. The Fairfield public water supply field is located approximately 3 miles west of Travis AFB. The large production wells at the golf course and in Fairfield tend to be deeper, as much as 1,000 feet below ground surface, than the nearby domestic wells (CH2M HILL, 2001).

The groundwater gradient beneath Travis AFB flows to the south and follows the regional trend. The horizontal hydraulic gradient ranges from 0.003 to 0.005 vertical foot per horizontal foot in the upper portion of the aquifer (URS, 2004). In the deeper portion of the aquifer, the hydraulic gradient ranges from 0.003 to 0.10 vertical foot per horizontal foot (Air Force, 1998).

3.5.3 Surface Water

Travis AFB is located in the northeastern portion of the Fairfield-Suisun Hydrologic Basin. Within this basin, water generally flows south to southeast toward Suisun Marsh, an 85,000-acre tidal marsh that is both the largest contiguous estuarine marsh and the largest wetland in the continental United States (CH2M HILL, 2001). Suisun Marsh drains into Grizzly and Suisun Bays. Water from these bays flows through the Carquinez Strait to San Pablo Bay and San Francisco Bay, and ultimately discharges into the Pacific Ocean near the City of San Francisco.

Travis AFB lies in the southern portion of the Union Creek watershed. The headwaters of Union Creek are located approximately 1 mile north of the Base, near the Vaca Mountains, where the creek is an intermittent stream. Union Creek splits into two branches north of the Base. Onbase, the main (eastern) branch is impounded into a recreational pond designated as the Duck Pond. At the exit from the Duck Pond, the creek is routed through an underground storm drainage system to the southeastern Base boundary, where it empties into an open creek channel.

The west branch of Union Creek flows south and enters the northwestern border of the Base, east of the David Grant Medical Center, in an excavated channel. This channel flows south and parallels Ragsdale Street for approximately 4,000 feet. Flow in the channel is then directed to a culvert under the runway and discharges to the main channel of Union Creek at Outfall II. From Outfall II, Union Creek flows southwest and discharges into Hill Slough, a wetland located 1.6 miles from the Base boundary. Surface water from Hill Slough flows into Suisun Marsh.

Union Creek is the primary surface water pathway for runoff at Travis AFB. Stormwater runoff flows into the creek through a network of pipes, culverts, and open drainage ditches. Local drainage patterns have been substantially altered within the Base by the rerouting of Union Creek, construction of the aircraft runway and apron, installation of storm sewers and ditches, and general development (i.e., construction of buildings, roads, and parking lots). The surface water collection system divides the Base into eight independent drainage areas. The eight drainage areas are shown on Figure 3-2. The eastern portion of the Base (Drainage Basin XE) is served by one of the drainage systems that collect runoff from along the runway and the inactive sewage treatment plant area and direct it to Denverton Creek and Denverton Slough. Denverton Creek is an intermittent stream near the Base. The northwestern portion of the Base (Drainage Basin XW) drains to the west, toward the McCoy Creek drainage area. McCoy Creek is also an intermittent stream near the Base. The remaining six onbase drainage areas empty into Union Creek (CH2M HILL, 2001).

3.5.4 Floodplains

The two branches of Union Creek (see Section 3.5.2) are located within the 100-year floodplain. The western branch of Union Creek, located within the floodplain, is 15,000 feet long; its depth varies from 4 to 15 feet, and its width ranges from 15 to 25 feet. The total area encompassed by the western branch of Union Creek is 8.6 acres (Travis AFB, 2003a).

Approximately 25 acres of the eastern branch of Union Creek are in the floodplain (Travis AFB, 2003a). This area includes the Duck Pond and associated riparian regions. The remaining acreage consists of 17,000 feet of Union Creek. The width of the creek along this stretch ranges from 10 to 15 feet and its depth varies from 4 to 15 feet.

Approximately 38 percent of Travis AFB consists of impervious areas. To prevent flooding, runoff from these impervious areas enters the stormwater drainage system. The Base's stormwater drainage system is designed to accommodate a 10-year, 24-hour storm (Travis AFB, 2003a).

3.5.5 Wastewater

Industrial and sanitary wastewater produced from all lavatories, showers, and janitorial sinks in all buildings and from housing units are discharged to the sanitary sewer system. The system consists of more than 41 miles of steel, asbestos, concrete, and plastic gravity sewers and force mains ranging in size from 4 to 21 inches, and 10 pump stations. Sewage flows to the Fairfield-Suisun Sewer District sewage treatment facilities via a main adjacent to the south gate. The contract between the Base and the Fairfield-Suisun Sewer District is based on an average daily flow of 1.6875 million gallons. In fiscal year 2001, the average daily flow from the Base was approximately 1.6 million gallons, with a peak recorded flow of 2.24 million gallons. The Base uses a sewage overflow facility at the former wastewater treatment plant in the southwest corner of the Base. The overflow facility stores sewage during peak flows, then transmits it to the Fairfield-Suisun Sewer District when flow volumes subside. The overflow facility consists of five basins with a combined capacity of 18.2 million gallons. Sanitary and de minimis industrial wastes are discharged to the Fairfield-Suisun Sanitation District under permit number 433-02 (Travis AFB, 2002a).

Because much of the system was installed more than 40 years ago, approximately 6,800 feet of sewers are overloaded during a 5-year storm event. The overall condition of the sanitary sewer system is degraded, due to the deteriorated condition of the piping system and the occurrence of infiltration and inflow. The Base is currently determining the scope and timing of repair projects for the system. According to the Travis AFB General Plan, the system will not be considered adequate to meet future conditions until significant improvement projects have been completed (Travis AFB, 2002a).

3.6 Biological Resources

3.6.1 Areas Subject to Regulation under Sections 404 and 401 of the Clean Water Act

The U.S. Army Corps of Engineers (USACE) regulates discharge of dredge and fill material into waters of the U.S. (including wetlands) under Section 404 of the CWA. Waters of the U.S. are defined as all navigable waters, including the following:

- All tidal waters
- All interstate waters and wetlands
- All other waters such as lakes, rivers, streams (perennial or intermittent), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation, or destruction of which could affect interstate commerce
- All impoundments of water mentioned above
- All tributaries to waters mentioned above
- Territorial seas
- All wetlands adjacent to waters mentioned above

Waste treatment systems, including treatment ponds, are not waters of the U. S. (33 CFR Section 328.3).

Wetlands are areas that “are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE, 1987). Actions that involve the placement of fill material into jurisdictional waters and wetlands must comply with Sections 404 and 401 of the CWA.

The limits of wetlands are determined through implementation of USACE’s three-parameter test, according to the protocols outlined in 1987 by USACE, which examines soils, wetlands, and hydrology. The limits of jurisdictional waters of the U.S. (including wetlands) in non-tidal waters extend to the ordinary high water line, adjacent wetlands above the ordinary high water line, or, if not adjacent, to the limits of the wetland. The ordinary high water line is defined as the line on the shore established by the fluctuation of water and indicated by physical characteristics, such as a natural line impressed on the bank, shelving, scouring, changes in the character of the soil, destruction of terrestrial vegetation, presence of litter or debris, or other appropriate evidence (33 CFR Section 328.4).

The term adjacent means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by constructed dikes or barriers, natural river berms, and beach dunes are adjacent wetlands. When waters of the U.S. consist only of wetlands, the jurisdiction extends to the limit of the wetlands (33 CFR Section 328.3(c)).

Wetlands have been delineated in the vicinity of Buildings 1516 and 1520; no wetlands occur in the vicinity of Building 1518 (see Figure 3-1).

Recent Changes in the Jurisdiction of the U.S. Army Corps of Engineers

Due to the recent Supreme Court ruling on *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, the USACE is currently determining the scope of its jurisdiction over isolated wetlands under the CWA. This ruling found that the Migratory Bird Rule, used to bring isolated wetlands into jurisdiction based on a link to interstate commerce, is not supported by the CWA, and that the USACE cannot rely on this rule as the sole basis for jurisdiction. The Court found that, on this basis, regulation of isolated, intrastate, and non-navigable waters was outside the authority of the CWA.

There are other federal nexuses than the Migratory Bird Rule that can bring isolated wetlands under CWA jurisdiction. For example, other connections with interstate commerce might support the assertion of CWA jurisdiction. Jurisdiction might also be possible if the use, degradation, or destruction of the wetlands could affect other waters of the U.S. Additionally, the Supreme Court affirmed that isolated wetlands determined to be adjacent (defined as bordering, contiguous, or neighboring) to navigable waters are still subject to USACE jurisdiction. As described in *United States v. Riverside Bayview Homes*, the USACE's jurisdiction over navigable waters extends to tributaries of navigable waters, upstream to the highest reaches of the tributary system, and to all wetlands adjacent to any and all of those waters.

Riparian Habitat

Riparian vegetation grows along the shores of freshwater creeks, rivers, and lakes. Riparian wetlands at Travis AFB are limited to the banks of Union Creek. The most extensive riparian wetland is adjacent to the three permanent ponds in the Castle Terrace housing area, along the northern portion of the eastern branch of Union Creek and upstream of the Duck Pond (Travis AFB, 2003a). Although willows and coyote brush can be found along Union Creek, the dominant plant species found in the riparian zone of Union Creek are mainly herbaceous and consist of beardless wild rye (*Leymus triticoides*), Harding grass (*Phalaris aquatica*), and saltgrass. A noxious weed species, broad-leaved pepperweed (*Lepidium latifolium*) also occurs in this habitat type. Hydrophytes, such as cattails and rushes, are also commonly found at the toe of the creek slope, at the transition between riparian habitat and emergent marsh (CH2M HILL, 2001). Riparian habitat exists at the pond northeast of water reservoir Building 1516 and east and south of water reservoir Building 1520.

Vernal Pools

Vernal pools are shallow depressions or small, shallow pools that fill with water during the winter rainy season, then dry out during the spring and become completely dry during the summer. Most vernal pools at Travis AFB are northern claypan vernal pools that occur on

deep alluvial soils. Vernal pools have developed an ecologically unique flora that has evolved to tolerate the extreme wetting and drying cycles. Vernal swales, which are ecologically and floristically similar to vernal pools, also occur at Travis AFB. Vernal swales consist of drainways or poorly defined depressions that are inundated seasonally, but hold standing water for relatively short periods (Travis AFB, 2003a).

During the time that the vernal wetlands contain water, biotic communities develop over relatively restricted areas. A federally-listed species, the vernal pool fairy shrimp (*Branchinecta lynchi*), inhabits some of the vernal pools (Travis AFB, 2003a). Overall, 110 species of plants have been historically identified in vernal wetlands at the Base, including three species – akali milkvetch (*Astragalus tener* var. *tener*), Contra Costa goldfields (*Lasthenia conjugens*), and the San Joaquin spearscale (*Atriplex joaquiniana*) – that are considered special-status species by the California Native Plant Society. Brittscale (*Atriplex depressa*) has also been observed at Travis AFB. Contra Costa goldfields is listed as federally endangered.

Vernal pools are found throughout the Base. These sites vary in size from 1 acre to less than 50 square feet (ft²), and can be a single pool, swale, or large, hydrologically associated pool cluster (Travis AFB, 2003a). The vernal wetlands are concentrated along the western, southern, and southeastern boundaries of the Base. The highest quality, intact vernal pools are located on the northwestern portion of the Base. The vernal pools near water reservoir Buildings 1516 and 1520 are grassland-dominated and do not support a unique flora.

3.6.2 Special-status Species

Special-status species consist of species that are listed by the U.S. Fish and Wildlife Service or the California Department of Fish and Game (CDFG) as rare, threatened, or endangered and plant species listed by the California Native Plant Society. Table 3-3 lists special-status species potentially occurring at Travis AFB. The information for this section was taken from the Travis AFB Integrated Natural Resources Management Plan (Travis AFB, 2003a), the Travis AFB General Plan (Travis AFB, 2002a), CDFG's California Natural Diversity Database (CDFG, 2004), and the California Native Plant Society Inventory (California Native Plant Society, 2001).

Federally Listed Species

Four federally listed species have been observed at Travis AFB and eight others have the potential to occur. The following federally listed species have been identified at Travis AFB:

- Contra Costa goldfields (*Lasthenia conjugens*), a federally endangered plant species
- Vernal pool fairy shrimp (*Branchinecta lynchi*), a federally threatened invertebrate species
- Vernal pool tadpole shrimp (*Lepidurus packardii*), a federally endangered crustacean species
- California tiger salamander (*Ambystoma californiense*), a federally threatened amphibian species (CDFG, 2004)

In a 1999 study, Contra Costa goldfields (*Lasthenia conjugens*) were identified in the north-west part of the Base and at the southwest end of the main runway. The vernal pool fairy shrimp (*Branchinecta lynchi*) has been identified in several studies and is likely to be present in many of the vernal pools within the Base. In a 1999 study of the Burke property, vernal pool fairy shrimp were found in the vernal pools located a minimum distance of 400 feet east of Building 1520. In unpublished surveys conducted in 2005, vernal pool fairy shrimp were found in a vernal pool located approximately 400 feet north of Building 1516. A dead California tiger salamander (*Ambystoma californiense*) was found on the site of the Castle Heights housing area prior to construction (Travis AFB, 2002a).

TABLE 3-3

Special-status Species Potentially Occurring at Travis Air Force Base
Environmental Assessment for Replacement of Water Reservoirs, Travis Air Force Base, California

Species Common Name	Species Scientific Name	Protection Status	Presence
Plants			
Contra Costa goldfields	<i>Lasthenia conjugens</i>	FE	K
Crampton's tuctoria	<i>Tuctoria mucronata</i>	FE/SE	P
Showy Indian clover	<i>Trifolium amoenum</i>	FE	P
Colusa grass	<i>Neostapfia colusana</i>	FT/SE	P
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	SE	P
Animals			
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	K
California tiger salamander	<i>Ambystoma californiense</i>	FT	K
California red-legged frog	<i>Rana aurora draytonii</i>	FT	P
Giant garter snake	<i>Thamnophis couchi gigas</i>	FT/ST	P
Delta green ground beetle	<i>Elaphrus viridis</i>	FT	P
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	P
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE	K
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE	P

Sources: Travis AFB, 2003a; CDFG, 2004

Notes:

FE = Federal Endangered

FT = Federal Threatened

SE = State Endangered

ST = State Threatened

K = Known to occur at Travis AFB

P = Potential to occur at Travis AFB

Although no other federally listed threatened or endangered species are known to be present at the Base (Travis AFB, 2002a), the following eight (Travis AFB, 2003a) species have the potential to occur onbase because suitable habitat is present:

- Crampton's tuctoria (*Tuctoria mucronata*), a federally endangered plant species
- Showy Indian clover (*Trifolium amoenum*), a federally endangered plant species
- Colusa grass (*Neostapfia colusana*), a federally threatened plant species

- California red-legged frog (*Rana aurora draytonii*), a federally threatened amphibian species
- Giant garter snake (*Thamnophis couchi gigas*), a federally threatened reptile species
- Delta green ground beetle (*Elaphrus viridis*), a federally threatened insect species
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), a federally threatened insect species
- Conservancy fairy shrimp (*Branchinecta conservatio*), a federally endangered crustacean species

California State-listed Species

The Swainson's hawk (*Buteo swainsoni*) is known to nest onbase, and suitable habitat can be found in the annual grasslands scattered across the Base and the riparian habitat of Union Creek in the southern part of the Base (Travis AFB, 2002a). The following four species have the potential to occur at Travis AFB because suitable habitat is present:

- Boggs lake hedge-hyssop (*Gratiola heterosepala*), a state-listed endangered plant species
- Crampton's tuctoria (*Tuctoria mucronata*), a state-listed endangered plant species
- Colusa grass (*Neostapfia colusana*), a state-listed endangered plant species
- Giant garter snake (*Thamnophis couchi gigas*), a state-listed threatened reptile species

3.7 Socioeconomic Resources

Socioeconomic resources include the population, income, employment, and housing conditions of a community or region of influence. Socioeconomic conditions could be affected by changes in the rate of population growth, the demographic characteristics of a community, or employment within the region of influence caused by the implementation of the Proposed Action.

The total population of Solano County is approximately 412,000 (U.S. Census Bureau, <http://quickfacts.census.gov/qfd/states/06/06095.html>). Travis AFB is the largest employer in Solano County, employing more than 14,000 people, including 3,494 civilians. It provides approximately 10 percent of the total local employment and has an annual payroll of \$451 million. The Base adds an annual value of \$176 million to the community by creating an estimated 5,300 indirect jobs. Travis AFB workers participate in numerous group and charity projects and contribute more than \$333,000 annually to charitable organizations. The Base's overall impact on the county and surrounding area is estimated to be in excess of \$790 million (Travis AFB, 2002a).

The Base is located in a rapidly growing part of the San Francisco Bay Area. Solano County grew at a rate 50 percent higher than the whole Bay Area between 1990 and 2000. During the same period, the City of Fairfield grew at twice the overall rate. This accelerated rate of growth is expected to continue, and more than 80,000 additional residents are expected to migrate to Solano County by 2010. The local communities are creating development patterns that are compatible with the Base and its mission through their local plans and ordinances (Travis AFB, 2002a).

Approximately 14 percent of the military personnel who live offbase reside in Vacaville, and another 6 percent reside within the City of Fairfield. More than 8,700 military personnel retire to the area surrounding Travis AFB (Travis AFB, 2003c).

3.8 Cultural Resources

3.8.1 Cultural History

The region in which Travis AFB is located was once inhabited by the Southern Patwin (or Wintuan) tribe of Native Americans. The early inhabitants of the region established tribelets (villages) adjacent to freshwater marshes and hunted, gathered, and fished for subsistence. The primary tribelets in the region were the Suisun and Talenas. Spanish missionaries arrived circa A.D. 1750 to find a proto-agriculture culture in the region (Travis AFB, 2003b). The Southern Patwin were adversely affected by mission activities, disease, and disruption by gold miners, who eventually became settlers, and had largely abandoned the area prior to epidemics of malaria and smallpox in 1833 and 1837. Descendants of the Southern Patwin currently reside in the northern part of their former range in the Sacramento Valley (URS, 2004).

The area surrounding Travis AFB is cultivated for agricultural products and grazing livestock. These activities were first performed during the Spanish Mission Period and later by Mexicans and European Americans during the Mexican Period and early American Period. The Spanish ruled the region from 1750 until the Mexican government took control in 1830. American rule replaced Mexican rule beginning in the 1840s (Travis AFB, 2003b).

The land currently occupied by Travis AFB was initially known as “poor man’s acres” and was not considered prime farmland. The first known settler, a farmer named Brinkerhoff, arrived in the 1850s. The Base site was historically used for ranching and limited irrigated farming (Travis AFB, 2003b).

Travis AFB was originally created as a temporary bomber base in 1942. The location was quickly recognized as an excellent air transport facility and was commissioned as the Fairfield-Suisun Army Air Base in 1943. In 1950, the Base was renamed after a former commander of the 9th Heavy Bombardment Wing, Brigadier General Robert Falligant Travis. Today, Travis AFB is known as “The Gateway to the Pacific” and is among the largest and busiest military air terminals in the United States.

3.8.2 Cultural Resource Investigations and Resources

Since 1909, 19 cultural resource studies have been conducted at Travis AFB or in the surrounding area (Travis AFB, 2003b). These studies identified 10 archeological sites and 27 buildings and structures on Base property that were significant. Three archeological sites were prehistoric and the remaining seven were historic sites. All 10 sites were evaluated for eligibility for the National Register of Historic Places and were deemed not eligible.

Twenty-seven buildings and structures associated with the Cold War are potentially eligible for inclusion on the National Register of Historic Places, and are the only known cultural resources at Travis AFB (Travis AFB, 2003b). None of the 27 potentially historic buildings are located near the Proposed Action.

3.9 Land Use

Travis AFB occupies approximately 5,128 acres of land near the center of Solano County, California (Travis AFB, 2002a). The Base is located fewer than 5 miles east of downtown Fairfield and approximately 8 miles south of downtown Vacaville (see Figure 1-1). Solano County's population in 2000 was 394,542 (U.S. Census Bureau, 2000). This population grew to approximately 412,000 by 2003 (<http://quickfacts.census.gov/qfd/states/06/06095.html>). From 1980 to 1990, the population of Solano County increased nearly 45 percent; however, the rate of growth declined between 1990 and 2000 (16 percent) (U.S. Census Bureau, 2000) and between 2000 and 2003 (4.5 percent, estimated).

3.9.1 Land Use Categories

The land use areas of Travis AFB are grouped into 12 functional categories, as follows:

- **Airfield** – Uses consist of pavement system, related open space, navigational aids, and airfield and airway clearance surfaces.
- **Aircraft Operations and Maintenance** – Uses include aircraft operations, aircraft maintenance, aircrew and maintainer training facilities and passenger and freight terminal facilities.
- **Industrial** – Uses include fire stations, Base supply and equipment complex, fuel facilities, vehicle maintenance, civil engineer complex, open storage, utilities infrastructure, emergency response, ordinance and weapons storage and other industrial uses.
- **Administrative** – Uses include personnel, family services, police and security, wing/group headquarters, legal services, communications, gate and visitor management, and other support facilities.
- **Community (Commercial)** – Uses include the exchange, commissary, banking, dining facilities, eating establishments, indoor recreation facilities and service stations. Supports the needs of personnel and their families.
- **Community (Service)** – Uses include schools, education centers, and library, chapel, post office, and child development facilities. Supports the needs of personnel and families.
- **Medical** – Uses include medical, dental, and Veterans Administration clinics, veterinary clinics, and bio-environmental engineering facilities.
- **Housing (Accompanied)** – Uses include family housing, mobile home parks, and temporary lodging facilities.
- **Housing (Unaccompanied)** – Uses include dormitories for bachelors and quarters for visiting personnel.
- **Outdoor Recreation** – Uses include activities such as golf and swimming, park and picnic facilities, and recreation equipment checkout and storage.

- **Open Space** – Uses include conservation and preservation areas, safety, security, and buffer zones, including spaces that are unsuitable for development.
- **Water** – Uses include open space and outdoor recreation activities, and also buffer space between incompatible uses, in the form of ponds, streams, and lakes.

3.9.2 Land Use Restrictions

Land use restrictions and controls are established as buffers surrounding certain facilities to protect human health from potential adverse effects. For example, protective buffer zones are designated around the munitions storage areas in the event of accidental explosions. In some parts of the Base land use controls are formally in place to protect human or environmental health from contaminated soils or water.

Travis AFB has established explosive safety quantity-distance zones to protect onbase military and civilian populations from hazards associated with the handling and/or storage of explosives. The radii of the quantity-distance zones range from 1,250 to 2,100 feet. These zones ensure that any areas where explosives are stored and/or handled (such as the munitions storage area) are separated from the following:

- Other areas containing explosives or propellants
- Petroleum, oil, and lubricant storage
- Inhabited buildings and facilities not related to explosives operations
- Aircraft parking, storage, and operation areas

3.9.3 Land Use Surrounding Travis Air Force Base

The lands surrounding Travis AFB on the northeast and east are primarily used for ranching and grazing. Areas to the south are a combination of agricultural and marshland. A few commercial/light industrial areas are present to the north of the Base. The area west of Travis AFB is predominantly residential.

3.10 Transportation System

The following section describes the components of the transportation system in place at Travis AFB. Information regarding the transportation system has been summarized from the Travis AFB General Plan (Travis AFB, 2002a).

3.10.1 Roadways/Streets

The roadway network serving Travis AFB consists of several major thoroughfares, including Travis Avenue, Ragsdale Street/Cannon Drive, Burgan Boulevard, Parker Road, Hickam Avenue, and Hangar Avenue. Ragsdale Street is a two- to four-lane road oriented in a north-south direction. Ragsdale Street is centrally located, and therefore serves much of the traffic to and from the flightlines and freight-handling areas. Minor streets, branching off from these main roadways are Skymaster Drive, Broadway Street, and 1st Street, which serve as collector facilities for the Base. The Travis AFB General Plan (Travis, 2002a) does not identify traffic issues associated with the main thoroughfares, and major traffic improvement projects are not planned.

3.10.2 Other Facilities

Other facilities within Travis AFB's transportation system include the following:

- **Parking.** Parking facilities are generally associated with each building on the Base. Two areas have been identified as having either insufficient parking capacity or design flaws – the parking area that serves the Child Development Center, the mini-mall, and the Credit Union; and the parking area serving Erwin Hall.
- **Sidewalks.** Pedestrian walkways are provided in most industrial and residential areas, as well as along major roadways. There are also pedestrian walkways around the Duck Pond, located in the northeastern portion of the Base, and through the greenbelt that extends from just south of North Gate Park at Burgan Boulevard to Cannon Drive.
- **Bicycle Paths.** To keep bicycle paths separate from roadways, many facilities are shared with pedestrians. New paths are being constructed along Burgan Boulevard, Broadway Street, Hickam Avenue, and Hangar Avenue.
- **Mass Transit.** Travis AFB's "Blue Bus System" provides transportation around commercial centers as well as to and from the flightline. This system is only intended for transportation associated with work-related activities.
- **Passenger/Cargo Terminal.** The terminal is located at the south end of Burgan Boulevard and is accessed via a passenger-loading zone in front of the terminal. The terminal is scheduled to be upgraded, including improvements of the circulation system.
- **Railheads.** One rail spur connects the Base with the Union Pacific Railroad. The spur enters the Base on the east (near the Flying Club runway) and ends near Building 572. An inactive wye track is located in the tank farm area.

3.11 Airspace/Airfield Operations

Airfield operations refer to any takeoff or landing at an air base. In fiscal year 2003, the air crews at Travis AFB flew more than 68,000 hours, hauling 300 million pounds of cargo and 93,000 passengers (Travis AFB, 2003c). Daily operations are conducted by several units stationed at the Base. These units are described below.

3.11.1 Airfield Safety

Travis AFB has established several clearance zones, in accordance with Unified Facilities Criterion 3-260-01. Clearance zones are imaginary surfaces developed to promote safe operations in the airfield vicinity, and include the following:

- **Primary Surface.** This area extends 200 feet beyond each end of the runway and 1,000 feet on both sides of the runway centerline.
- **Clear Zone.** This zone extends 3,000 feet from the end of the runway and 1,500 feet on either side of the runway centerline.
- **Accident Potential Zones I and II.** Accident Potential Zone I extends 5,000 feet from the clear zone; Accident Potential Zone II extends an additional 7,000 feet from the edge of Accident Potential Zone I.

- **Approach/Departure Clearance Surface.** This surface was established to ensure safe landing/takeoff of aircraft at Travis AFB. The inclined plane, which is 2,000 feet wide at one end of the runway and 16,000 feet wide at the opposite end, extends 50,000 feet outward from the runway, at a slope of 50:1 along the runway centerline, to an elevation of 500 feet above ground surface. Activities are limited in this area to ensure safe aircraft operation. Restricted activities include: those that penetrate the clearance surface; those that would release substances into the atmosphere which could reduce visibility or impair the pilot's vision (smoke, dust, light emissions); those that produce emissions which could impact aircraft operation (communication or navigational equipment); and those which could attract birds.
- **Transitional Imaginary Surface.** The transitional surface is an inclined plane extending outward and upward, beginning at 1,000 feet from the runway centerline, at right angles to the centerline at a slope of 7:1.
- **Taxiway Clearance Line.** This zone extends 200 feet from the taxiway centerline. There are to be no obstacles, fixed or mobile, within this zone.

United Facilities Criterion 3-260-01 states that, to meet specific airspace/airfield operations criteria, construction must be more than 1,000 feet from the runway centerline, and constructed structures should be less than a 7:1 ratio from the 1,000-foot line. AFI 32-7084 lists the compatibility of various land uses with the different types of zones surrounding the airfield.

3.11.2 60th Air Mobility Wing

The 60th Air Mobility Wing is the host unit at Travis AFB, and operates the C-5 Galaxy cargo aircraft (21st and 22nd Airlift Squadrons) and the KC-10 Extender refueling aircraft (6th and 9th Airlift Squadrons) (Travis AFB, 2002a). The mission of this strategic unit is "to provide quality services and support for America's Global Reach through a responsive and flexible combat-ready air mobility force." The unit is capable of providing cargo, passenger, and patient airlift (including troop and equipment deployment and humanitarian support) in addition to aerial refueling. The unit is divided into four groups, as follows:

- 60th Maintenance Group
- 60th Medical Group
- 60th Operations Group
- 60th Mission Support Group

3.11.3 Tenant Units

The 349th, a reserve unit, is the primary tenant unit at Travis AFB, and also operates the C-5 Galaxy cargo aircraft and the KC-10 Extender refueling aircraft (Travis AFB, 2002a). Other tenant units include the following:

- The U.S. Army Reserve Division, 3rd Brigade, 91st Division
- The Air Mobility Command Band of the Golden West
- The Area Defense Counsel
- The 15th Expeditionary Task Force

- The 615th Air Mobility Operations Group, including the 715th and 815th Air Mobility Operations Squadrons
- The U.S. Navy Fleet Air Reconnaissance Squadron THREE Detachment, Travis (flying the E-6A Mercury)
- Air Force Auxiliary Civil Air Patrol, Travis Composite Squadron 22
- The 373rd Training Squadron, Training Detachment 14 (Air Education and Training Command)

Travis also provides support elements to three regional Air Force ROTC units, as follows:

- Detachment 85, University of California at Berkeley
- Detachment 045, San Jose State University, California
- Detachment 88, California State University, Sacramento

3.12 Safety and Occupational Health

Safety and occupational health is managed by the Bioenvironmental Engineering Flight.

Construction site safety and accident prevention are ongoing activities for all Air Force job sites. As part of the contracts for construction services, standard terms and conditions include safety as a priority. Areas of concern include compliance with regulations typical to construction projects, such as confined-space regulations, handling of hazardous materials, minimum personal protection equipment standards, and limited access to the construction area.

3.13 Environmental Management (Including Geology, Soils, and Pollution Prevention)

The following sections describe the regional geology of Travis AFB, soil types present, and Pollution Prevention Plans that are in place at the Base.

3.13.1 Geology

Travis AFB is located on the western edge of the Sacramento Valley segment of the Great Valley Geomorphic Province. The Coast Range Geomorphic Province, which consists of folded and uplifted bedrock mountains, lies just to the west of Travis AFB (Thomasson et al., 1960; Olmsted and Davis, 1961).

The land surface structure (geomorphology) of Travis AFB is characterized by gently sloping alluvial plains and fans. These coalescing, low-relief fans were deposited by Ulati, Union, Alamo, Laurel, and Suisun Creeks. Most of the alluvial material was deposited prior to the last period of glaciation during the Pleistocene Epoch, and is referred to as Older Alluvium. During the last 15,000 years, as sea levels have risen, the drainages have refilled with alluvium. This material is referred to as Younger Alluvium. Some topographic relief in the form of very low ridges is provided by outcroppings of sedimentary rock in the Travis AFB area.

Figure 3-3 is a geologic map illustrating the distribution of shallow bedrock units and alluvium in the vicinity of Travis AFB. Bedrock at Travis AFB consists of consolidated to semi-consolidated sedimentary rock.

Uplift of the Coast Ranges and sedimentary deposition in adjacent basins continued throughout the Pleistocene Epoch, and formed the current Fairfield-Suisun Hydrologic Basin. Travis AFB is located on an alluvial fan that extends from the Vaca Mountains to Suisun Marsh. The alluvium in the vicinity of Travis AFB originated from the erosion of the elevated bedrock formations and subsequent deposition in various continental environments. Sediment eroded from the Vaca Mountains has been carried in several streams (e.g., Union Creek) which have migrated laterally across the Base.

At Travis AFB, the overall thickness of the alluvium ranges from 0 to approximately 70 feet, but is generally less than 50 feet. West of Travis AFB, the thickness of the alluvium increases to over 200 feet (Thomasson et al., 1960).

Past tectonic processes folded and uplifted the bedrock to form the hills and mountains located north, west, and south of Travis AFB. Outcrops of relatively resistant Markley Sandstone, Domengine Sandstone, and Tehama Formation form most of the topographic high points on base.

Travis AFB is located within the San Francisco Bay region, a region that is susceptible to frequent earthquake activity. The USGS concluded that there is a 70 percent probability of at least one magnitude 6.7 or greater earthquake, capable of causing widespread damage, striking the San Francisco Bay region before 2030 (Travis AFB, 2002a).

The Vaca Fault system, shown on Figure 3-3, traverses the eastern portion of the Base. A potentially more devastating fault, the Green Valley Fault, is located 10 miles west of the Base. The other and more prominent fault zones in the San Francisco Bay region are the San Andreas, the Hayward, and the Calaveras Faults, which are located 20 miles or more from the Base (Travis AFB, 2002a).

3.13.2 Soils

Soil develops from geologic material exposed at the earth's surface as the material is altered through physical, chemical, and biological processes. The nature of a soil is, in part, a function of climate, surface slope, time of exposure at the surface, and the type of original (parent) material. Soils in the vicinity of Travis AFB are classified as alfisols, which are primarily silt and clay loams that exhibit low permeabilities and poor drainage characteristics.

A soil map depicting the distribution of soil types for Travis AFB and vicinity is provided on Figure 3-4.

3.13.3 Pollution Prevention

Travis AFB has an active Pollution Prevention Program that strives to reduce the generation of wastes through a hierarchy of actions ranging from the preferred choice of source reduction to recycling, treatment, and finally disposal, as a last resort. The Pollution Prevention Management Action Plan defines the framework to accomplish these actions. The Pollution Prevention Management Action Plan analyzes all processes that use

hazardous materials and generate hazardous waste streams, then evaluates options to reduce the volume and/or toxicity of generated wastes. This program includes minimizing wastes generated by ERP sampling activities.

3.14 Environmental Justice and Protection of Children

EO 12898 (1994) requires each federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low income populations.” A minority population can be described as being composed of people who identify themselves to the U.S. Census Bureau as American Indian or Alaskan Native, Asian or Pacific Islander, Black or African American, or of Hispanic origin, and where such population exceeds 50 percent of the population in an area or where the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population (Council on Environmental Quality, 1997).

Each year, the U.S. Census Bureau defines the national poverty thresholds, which are measured in terms of household income and the number of people within the household. Individuals falling below the poverty threshold (\$18,810 for a household of four in 2003) are considered low-income individuals (U.S. Census Bureau, 2004).

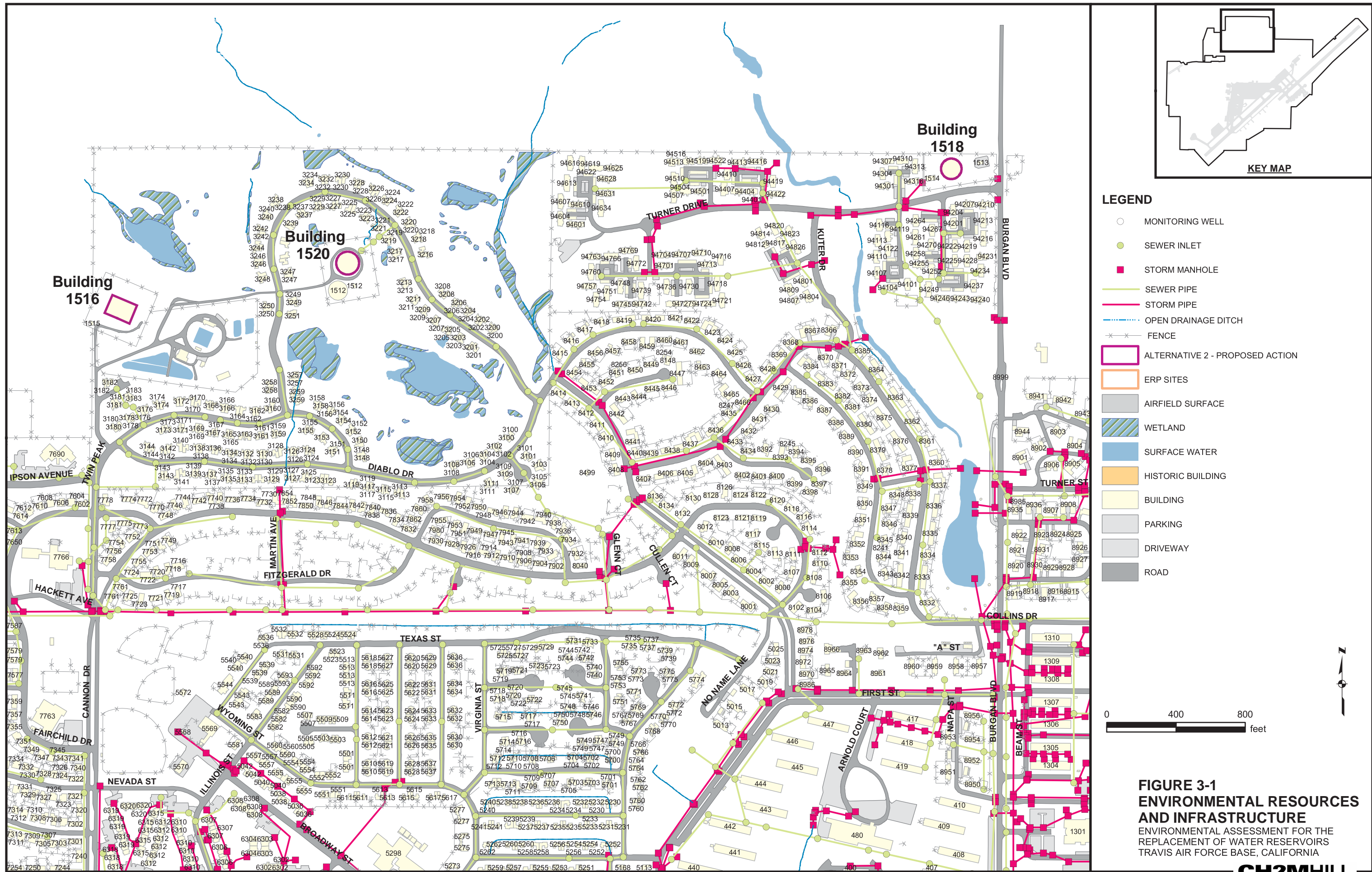
Solano is a large, demographically diverse county, with communities ranging from the urban areas of Vallejo and Fairfield in the southwest to small rural towns, such as Dixon and Rio Vista. The 2000 Census population of Solano County was 394,542, with 56.4 percent White (222,387 people) and 14.9 percent (58,827 people) African American; 17.6 percent of the county’s population is Hispanic. The percentage of individuals in Solano County below the poverty level was 8.3 (31,344 people) (U.S. Census Bureau, 2000).

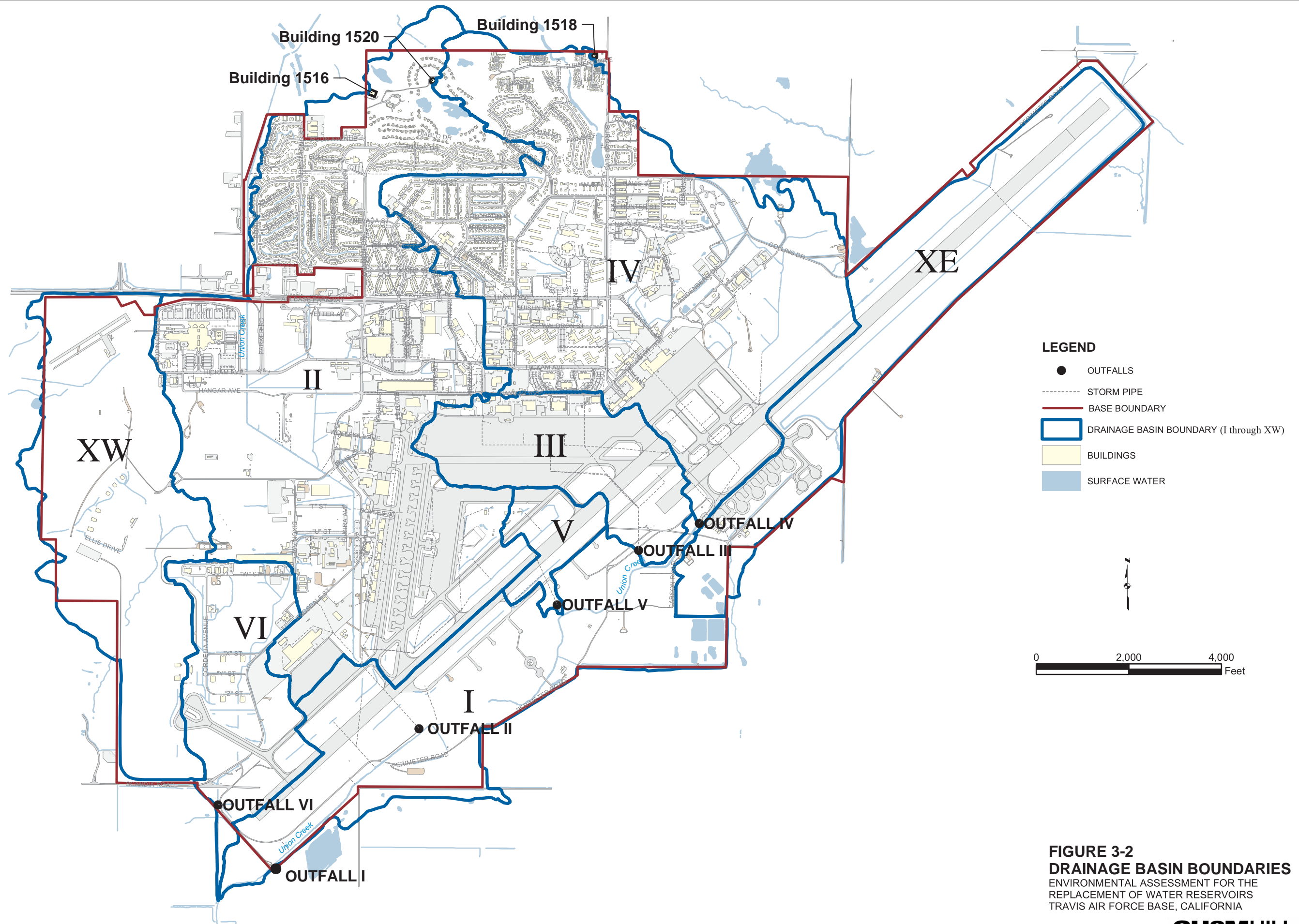
The City of Vallejo, the largest city in Solano County, has approximately 30 percent (116,760 people) of the county’s population. Vallejo is more diverse than the county as a whole, with a population that is 36 percent White, 23.7 percent African American, and 15.9 percent Hispanic. Approximately 10 percent of individuals in Vallejo are at or below the poverty level. Fairfield is the second largest city (96,178 people) in the county and the closest city to Travis AFB. Fairfield more closely reflects the cultural composition of the county. The greater part of the population in Fairfield is White (54,063, or 56.2 percent), with lower percentages of Hispanic (18.8 percent; 18,050 people) and African American (15.0 percent; 14,446 people). Approximately 9 percent of individuals live at or below the poverty level (U.S. Census Bureau, 2000).

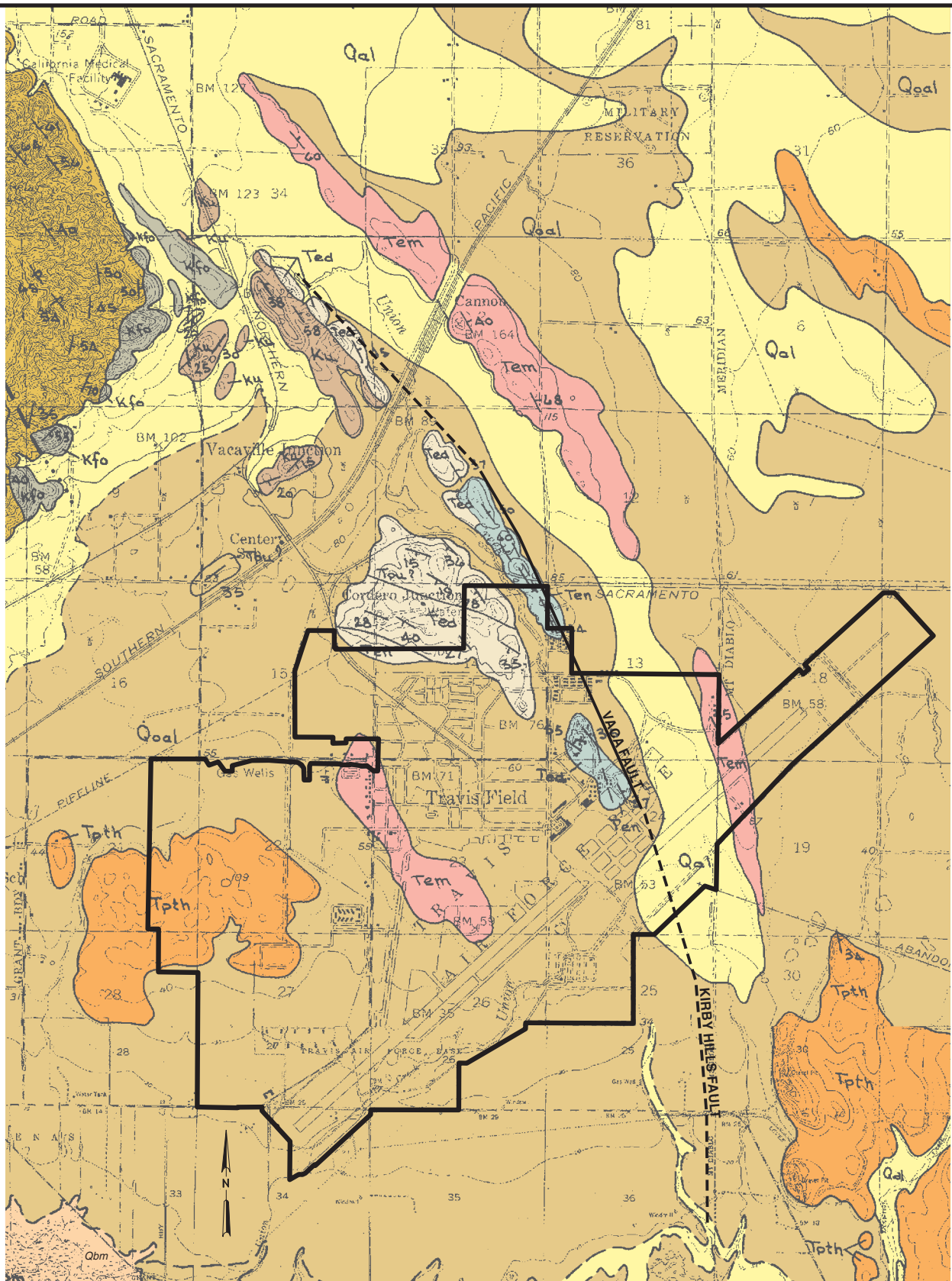
The resident population of the Base was 11,598 people in 2003 (Travis AFB, 2003c). Although demographic data for Travis AFB was not available, the racial composition of the Air Force serves as an approximation of the racial composition of the Base. In 2003, the Air Force was 75.2 percent White, 15.6 percent African American, and the remaining 9.2 percent was composed of other races (Air Force, 2003).

Children are present on Travis AFB in family housing, child development centers, the Travis AFB youth center, schools, and playgrounds (Travis AFB, 2004).

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LEGEND

- | | |
|--|---|
| Qal-YOUNGER ALLUVIUM | Ten-NORTONVILLE SHALE |
| Qbm-BAY MUD | Ted-DOMENGINE SANDSTONE |
| Qoal-OLDER ALLUVIUM | Tpu-UNNAMED FORMATION |
| Tpth-TEHAMA FORMATION | Kfo-FORBES FORMATION |
| Tem-MARKLEY SANDSTONE | Kg-GUINDA FORMATION |

FIGURE 3-3
GEOLOGIC MAP OF
TRAVIS AFB AND VICINITY
 ENVIRONMENTAL ASSESSMENT FOR THE
 REPLACEMENT OF WATER RESERVOIRS
 TRAVIS AIR FORCE BASE, CALIFORNIA

Common Outdoor Sound Levels

Common Indoor Sound Levels

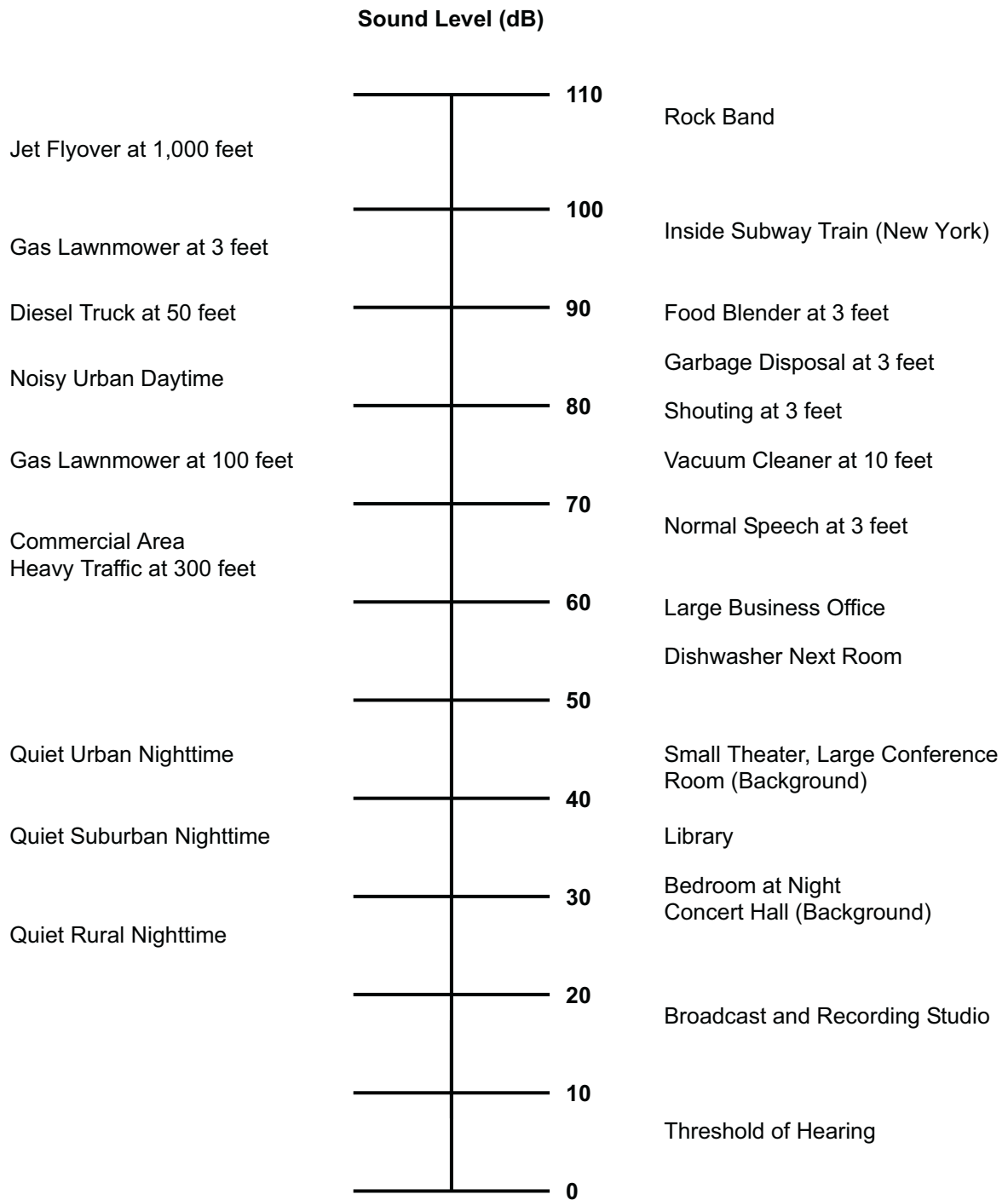


FIGURE 4-1
COMPARATIVE SOUND LEVELS
 ENVIRONMENTAL ASSESSMENT FOR THE
 REPLACEMENT OF WATER RESERVOIRS
 TRAVIS AIR FORCE BASE, CALIFORNIA
CH2MHILL

Environmental Consequences

4.1 Introduction

This section provides the regulatory background, as applicable, for the various environmental resource areas and evaluates potential impacts resulting from construction and operation of the proposed replacement water reservoirs. The potential impacts to the human and natural environments were evaluated by comparing the Proposed Action to the No Action Alternative. The subsection for each environmental resource or issue assesses the anticipated direct and indirect impacts, considering both short- and long-term project effects. As described in the following subsections, no significant adverse environmental impacts are anticipated for replacement of the water reservoirs.

4.2 Air Quality

4.2.1 Laws and Regulations

Federal

The U.S. Congress adopted the CAA in 1970, and its amendments in 1977 and 1990. The CAA and amendments are the body of federal laws that require the U.S. Environmental Protection Agency (EPA) and the states to regulate air pollution emissions from stationary and mobile sources to protect public health and welfare. Air quality regulations were first promulgated with the CAA, and revised with the CAA Amendment. They are published in 40 CFR Sections 50 through 97 and 1048 through 1068.

The CAA requires EPA to establish and maintain NAAQS, used to manage air quality across the country. Pollutants for which standards have been established are termed “criteria” pollutants, because the standards are based on criteria that show a relationship between pollutant concentrations and effects on health and welfare. From this relationship, EPA establishes acceptable pollutant concentrations to serve as ambient air quality standards. As mandated by the CAA, EPA has established maximum threshold standards for the following criteria pollutants: CO, PM₁₀ and PM_{2.5}, ozone, nitrogen dioxide, SO₂, and lead. Federal clean air laws require areas with unhealthy levels of ozone, CO, nitrogen dioxide, SO₂, and inhalable particulate matter to develop plans, known as State Implementation Plans (SIP), describing how they will attain NAAQS (see Section 4.2.1.2).

Under the conformity provisions of the CAA Amendment, no federal agency can approve or undertake a federal action, or “project,” unless the project has been demonstrated to conform to the applicable SIP. These conformity provisions were put in place to ensure that federal agencies would contribute to efforts to attain the NAAQS. The EPA has issued two conformity guidelines, transportation conformity rules that apply to transportation plans and projects and general conformity rules that apply to all other federal actions. A

conformity determination¹ is only required for the alternative that is ultimately selected and approved. The general conformity determination is submitted in the form of a written finding, issued after a minimum 30-day public comment period on the draft determination.

Applicable only in areas designated nonattainment or maintenance for NAAQS, the general conformity rule prohibits any federal action that does not conform to the applicable air quality attainment plan or SIP. General conformity applicability analysis requires quantification of direct and indirect, construction, and operation emissions for the project, and comparison of these emission levels to baseline emission levels. If the differences in emissions (the net emissions associated with the Proposed Action) exceed the general conformity de minimis levels for the peak year or any milestone year for attainment of standards, additional general conformity determination is required.

An action is exempt from the conformity rule (presumed to conform) if the total net project-related emissions (construction and operation) pass two tests: they are less than the de minimis thresholds established by the conformity rule, and they are not regionally significant (emissions are regionally significant if they exceed 10 percent of the total regional emission inventory). An action that produces emissions that exceed conformity thresholds, or is regionally significant, is required to demonstrate conformity with the SIP.

The CAA also requires preconstruction review of facilities and equipment that could potentially emit air contaminants. Permitting depends on the size of the emission source and its location in an attainment or nonattainment area. The BAAQMD is the agency with permitting authority in western Solano County (see Section 4.2.1.3).

California

The California Clean Air Act, approved in 1988, requires local air districts to develop and implement strategies to attain California's ambient air quality standards. CARB oversees California air quality policies. CAAQS were established in 1969 pursuant to the Mulford-Carrell Act. These standards are generally more stringent than the NAAQS, and limit four additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particulates (see Table 3-1).

The SIPs required by federal law are not single documents; they are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, and permitting), district rules, state regulations, and federal controls. CARB is the lead agency for all purposes related to the SIP. Local air districts and other agencies, such as the Bureau of Automotive Repair, prepare SIP elements and submit them to CARB for review and approval. CARB forwards SIP revisions to EPA for approval and publication in the Federal Register.

Bay Area Plans and Programs

As indicated previously, CARB is responsible for regulating air quality in California. BAAQMD implements standards and policies set forth by CARB. BAAQMD rules and regulations apply to all sources of emissions within the nine-county Bay Area region, including western Solano County. The Bay Area Air Quality Plan is a regional plan that addresses

¹A conformity determination is a process that demonstrates how an action would conform to the applicable implementation plan. If the emissions cannot be reduced sufficiently, and if air dispersion modeling cannot demonstrate conformity, then either a plan for mitigating or a plan for offsetting the emissions would need to be pursued.

how the San Francisco Bay Area will attain NAAQS and CAAQS. The plans and regulations require that new and modified stationary emission sources must apply for air quality permits, and if applicable, implement control measures and install emission-control devices.

4.2.2 Alternative 1 – No Action

Under the No Action Alternative, construction would not occur and air pollutant emissions associated with construction would not be generated. Emissions from operations, including travel to the site, would not change from current conditions.

4.2.3 Alternative 2 – Proposed Action

The Proposed Action would result in temporary, short-term adverse impacts to air quality as a result of demolition and construction emissions. Impacts from demolition and construction would be local (i.e., confined to the construction site area) and limited to the duration of the construction activities. Because no stationary or mobile emission sources would be required for operation of the replacement reservoirs, no emission increases would occur. Therefore, there would be no impact to air quality from operation of the replacement reservoirs.

Demolition and Construction Emissions

Demolition Emissions.

Fugitive dust emissions would result from the demolition of the existing water reservoirs. Demolition emissions of PM₁₀ were calculated according to the methodology provided in Chapter 9 of the *CEQA Air Quality Handbook* (South Coast Air Quality Management District, 1993), because BAAQMD does not have specific emission factors for demolition projects. Emission factors from Table 9-2 of the handbook were used to calculate the emissions from demolition of the existing reservoirs.

Construction Emissions.

Construction emissions are expected to occur as a result of engine exhaust from added vehicles trips of construction workers and offroad construction equipment, including earth-moving equipment and trucks. These emissions would primarily consist of NO_x, particulate matter, CO, and volatile organic compounds (VOC). Emissions of SO₂ from construction are not expected to be significant, because Travis AFB would use low-sulfur-content diesel fuel for the construction equipment.

The construction emissions of VOCs, NO_x, CO, and PM₁₀ under the Proposed Action were calculated according to the methodology provided in Chapter 9 of the *CEQA Air Quality Handbook* (South Coast Air Quality Management District, 1993), because BAAQMD does not have specific emission factors for construction projects. Emission factors from Table 9-1, for industrial facilities, were used. These emission factors include onsite construction equipment and worker travel.

The estimated emissions for each year of demolition and construction are shown in Table 4-1. Detailed construction emission calculations are provided in Appendix C.

TABLE 4-1

Estimated Alternative 2 Emissions during Demolition and Construction

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California

Year	Annual Emissions (tpy)			
	VOC	NO _x	CO	PM ₁₀
Demolition				
2006	NA	NA	NA	2.1
2007	NA	NA	NA	0.7
2008	NA	NA	NA	1.0
Construction				
2006	1.0	14.7	3.2	1.0
2007	1.7	24.7	5.4	1.8
2008	0.6	9.4	2.1	0.7

Note:

tpy = tons per year

NA = not applicable

Operation Emissions. The operation of the new reservoirs would be similar to operation of the existing reservoirs. There would not be any additional emission sources associated with operation of the new reservoirs; therefore, no emissions increases are expected.

Emissions Summary. Table 4-2 summarizes the projected total air emissions during demolition and construction of the replacement water reservoirs.

TABLE 4-2

Estimated Alternative 2 Total Emissions during Demolition and Construction

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California

Year	Annual Emissions (tpy)			
	VOC	NO _x	CO	PM ₁₀
2006	1.0	14.7	3.2	3.1
2007	1.7	24.7	5.4	2.4
2008	0.6	9.4	2.1	1.7

General Conformity

The CAA established a number of programs and permitting processes designed to protect and improve air quality. Section 176(c) of the CAA Amendment of 1990, 42 USC Section 7506(c), established a conformity requirement for federal agencies, which has been implemented by 40 CFR 93, Subpart B. A general conformity applicability analysis for the Proposed Action has been performed (see Appendix D) and is summarized here.

The Proposed Action would be located in the Basin in Solano County, which attains or is unclassified for all except the 1-hour and 8-hour ozone NAAQS. For these pollutants, the area is classified as nonattainment (other) and nonattainment (marginal), respectively. The urbanized areas of Solano County (which include the area occupied by Travis AFB) are maintenance areas for carbon monoxide under the *Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas* (CARB, 1998). In these areas, the ozone

precursor emissions, NO_x and VOCs, and CO are subject to general conformity requirements. In accordance with the air conformity requirements of 40 CFR Sections 51.853 and 93.153(b)(1), the de minimis threshold for such ozone nonattainment areas is 100 tpy per ozone precursor pollutant (NO_x and VOCs), per federal action. The de minimis threshold for a CO maintenance area is 100 tpy per federal action. The annual emission increases associated with the Proposed Action and the comparisons with the de minimis thresholds are shown in Table 4-3. Emissions of VOCs, NO_x, and CO during demolition and construction under the Proposed Action are below the de minimis thresholds of 100 tpy for each of the three applicable pollutants.

TABLE 4-3

Comparison of Alternative 2 Estimated Emissions and De Minimis Thresholds

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California

	Annual Emissions (tpy)		
	VOC	NO _x	CO
Year			
2006	1.0	14.7	3.2
2007	1.7	24.7	5.4
2008	0.6	9.4	2.1
De Minimis Threshold	100	100	100

Regional Significance

When the total emissions of the nonattainment and maintenance criteria pollutants do not exceed the de minimis limit, the emissions must then be compared to the air quality emissions inventory of the air basin to determine regional significance of the federal action. If the amount of the emissions is greater than 10 percent of the emissions inventory, the federal action is considered regionally significant for that pollutant (40 CFR Part 93, Subpart 153[i]).

Table 4-4 compares the net emissions from the demolition and construction under the Proposed Action with the Basin emissions inventory. VOC and NO_x emissions inventory data were obtained from the *San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard* (BAAQMD et al., 2001). CO emissions inventory data were obtained from the *Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas* (CARB, 1998). The potential increase in emissions of VOCs, NO_x, and CO for both construction and operation are below the 10 percent threshold. Therefore, the Proposed Action would not be considered regionally significant.

New Source Review

Replacement of the existing water reservoirs and operation of the replacement reservoirs would result in less than significant impacts to air quality. The Proposed Action would be exempt from permit requirements according to BAAQMD Regulation 2-1-123, because these reservoirs would be used exclusively for the storage or dispensing of water and contain no organic compounds.

TABLE 4-4

Comparison of Alternative 2 Emissions and Emissions Inventory
Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California

	VOC	NO_x	CO
Basin Emissions Inventory	162,425	191,625	692,040
Demolition and Construction Emissions (2006)	1.0	14.7	3.2
Percent of Emissions Inventory	0.0006	0.008	0.0005
Basin Emissions Inventory	162,425	191,625	692,040
Demolition and Construction Emissions (2007)	1.7	24.7	5.4
Percent of Emissions Inventory	0.001	0.01	0.001
Basin Emissions Inventory	162,425	191,625	626,340
Demolition and Construction Emissions (2008)	0.6	9.4	2.1
Percent of Emissions Inventory	0.0004	0.005	0.0003

Notes:

All emissions are listed in TPY.

Basin emissions inventory data for NO_x and VOCs were obtained from *San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard* (BAAQMD et al., 2001). Emissions inventory data for 2006 were used for emissions comparisons of all years.

Basin emissions inventory data for CO were obtained from *Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas* (CARB, 1998). Emissions inventory data for 2005 were used for the emissions comparisons of 2006 and 2007, and data for 2010 were used for the comparison of 2008.

4.3 Noise

This section describes noise impact criteria and discusses potential project-related noise impacts. Potential future project-related noise impacts were determined by analyzing anticipated changes in noise exposure attributable to the Proposed Action and its alternatives at identified noise-sensitive locations. Project-related noise exposure changes would likely result from construction activities under the Proposed Action. After construction, no change in noise levels is anticipated during use or operation.

The fundamental measure of sound levels is expressed in dB using a logarithmic scale. Noise is generally defined as sound that is undesirable for the following reasons:

- It is intense enough to damage hearing.
- It interferes with speech communication and sleep.
- It is annoying.

The Federal Interagency Committee on Urban Noise has developed land use compatibility guidelines for noise and provides recommended noise ranges for various land use categories based on this committee's findings. The Air Force has established land use noise compatibility criteria consistent with those published by the Federal Interagency Committee on Urban Noise in its publication, *Guidelines for Considering Noise in Land Use Planning and Control* (1980).

CNEL values of 60 dB and less are generally compatible with all land uses; 60 dB is the incompatibility threshold for residential and other noise-sensitive land uses, including schools, hospitals, and religious facilities. Commercial, industrial, and other types of recreational land uses (e.g., sports arenas, golf courses, amusements parks) are generally considered compatible with annual CNEL ranges between 70 and 75 dB, if measures are incorporated into the design and construction of structures associated with these land uses. Some transportation (e.g., railways, airports) and manufacturing (e.g., mining, nonlivestock agriculture, fishing, and forestry) land uses can tolerate annual CNEL ranges in excess of 85 dB. For comparison, the noise generated by a power lawnmower at 50 feet is 90 dB and the threshold for pain is 120 dB. Figure 4-1 shows some common activities and their corresponding dB levels.

4.3.1 Alternative 1 – No Action

Implementing Alternative 1 would not result in construction activities. Therefore, no construction noise would occur. Current operational noise levels are not expected to change. The background CNEL for this alternative site is between 60 and 65 dB (Travis AFB, 2002a).

4.3.2 Alternative 2 – Proposed Action

Typical construction-related noise is expressed in terms of schedule, equipment used, and types of activities. The noise level would vary during the construction period, depending on the type of construction activity. Construction can generally be divided into the following five phases, in which different types of construction equipment are used (EPA, 1971; Barnes et al., 1977; Miller et al., 1978):

1. Site preparation and excavation
2. Concrete pouring
3. Steel erection
4. Mechanical
5. Cleanup

The EPA Office of Noise Abatement and Control and the Empire State Electric Energy Research Company extensively studied noise from individual pieces of construction equipment and different types of construction sites (EPA, 1971; Barnes et al., 1977). Use of these data is conservative because, since these studies, public concerns about the adverse effects of noise have resulted in the inclusion of noise control measures in construction equipment design.

The loudest equipment types generally operating at a site during each phase of construction are presented in Table 4-3, in dB. The long-term composite average or equivalent site noise level, representing noise from all equipment, also is presented in the table. The composite levels are occasionally lower than the individual levels because the loudest pieces of equipment would not be operating continuously throughout the construction phase. Pile driving and rock drilling are not currently anticipated, but, if necessary, would be limited in duration and occur only during the day. Table 4-3 shows the noise levels expected 50 feet from the site during construction, according to the types of construction activities that might occur during construction.

TABLE 4-5

Typical Construction Equipment and Composite Site Noise Levels

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California

Construction Phase	Loudest Construction Equipment	Equipment Noise Level at 50 feet (dB)	Composite Site Noise Level at 50 feet (dB)
Site Preparation and Excavation	Dump Truck	91	89
	Backhoe	85	
Concrete Pouring	Truck	91	85
	Concrete Mixer	85	
Steel Erection	Derrick Crane	88	89
	Jackhammer	88	
Mechanical	Derrick Crane	88	84
	Pneumatic Tools	86	
Cleanup	Rock Drill	98	79
	Truck	91	

Sources: EPA, 1971; Barnes et al., 1977

Noise naturally dissipates by atmospheric attenuation as it travels through the air. Other factors that can affect the amount of attenuation are ground surface, foliage, topography, and humidity. For each doubling of distance from a noise source, the level can be expected to decrease by approximately 6 dB.

Noise associated with construction activities would be temporary, occur during daytime hours, and vary in levels, depending on the sources in use and types of activities. Noise associated with flightline activities at the Proposed Action site is approximately 60 to 65 dB CNEL (Travis AFB, 2002a). Water reservoir Building 1518 is closest to residences and is located approximately 100 feet from the nearest house. Water reservoir Buildings 1516 and 1520 are approximately 300 and 150 feet from the nearest residence, respectively. Building 1516 is also approximately 800 feet north of the Child Development Center, 1,200 feet northeast of Center Elementary School, and 1,300 feet north of the chapel located in Building 7766. No other sensitive receptors are located within 1,500 feet of the Proposed Action.

Because the distances from the Proposed Action site to the Child Development Center, Center Elementary School, and the Chapel are relatively long, noise levels are expected to dissipate to levels that are not significantly different from background conditions. Residential housing located near the Proposed Action would experience an increase in noise during construction. Construction activities would be limited to daylight hours, and the increase in noise would be minor and temporary. Construction activities are not expected to result in significant noise impacts.

Operational noise levels are not expected to change from current conditions.

4.4 Hazardous Materials, Wastes, ERP Sites, and Stored Fuels

The U.S. Congress passed RCRA in 1976 to protect both human health and the environment from the mishandling of solid and hazardous waste and to encourage the conservation of natural resources. RCRA requires a system for managing hazardous and universal wastes. Regulations adopted by the EPA in 40 CFR Sections 260 through 279 carry out RCRA's

congressional mandate. Regulations in Title 22 of the Code of California Regulations, Article 4.5, closely mirror those contained in the RCRA regulations (URS, 2004).

Travis AFB has procedures in place for handling, recycling, and disposing of wastes, hazardous materials, and fuels. The procedures are detailed in the following guidelines:

- AFI 32-7086, Hazardous Materials Management (Air Force, 1997)
- AFI 32-7042, Solid and Hazardous Waste Compliance (Air Force, 1994a)
- Travis AFB Hazardous Waste Management Plan (Travis AFB, 1999)
- Travis AFB Environmental Flight Policy for Contractors (Travis AFB, 2002b)
- AFI 32-7080, Pollution Prevention Program (Air Force, 1994b)
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition
- 40 CFR 246.200, The California Integrated Waste Management Act
- Travis AFB Instruction 32-206, Resource, Recovery and Recycling Program (Travis AFB, 2000)

Both project alternatives would comply with these procedures. Compliance with waste management procedures would reduce potential impacts from waste generation to less than significant levels. Neither the current facility locations nor the Proposed Action sites are located on or near stored fuel locations or ERP sites; therefore, impacts to stored fuel locations and ERP sites are not anticipated.

4.4.1 Alternative 1 – No Action

Implementation of the No Action Alternative would not result in changes to current waste or hazardous waste production or management practices.

4.4.2 Alternative 2 – Proposed Action

The Proposed Action would involve the demolition and replacement of three water storage facilities. The demolition phase of the Proposed Action would generate solid waste. Prior to demolition, a recycling plan would be submitted to Environmental Flight to ensure that materials generated during demolition are appropriately recycled, as feasible. The Defense Reutilization and Marketing Offices would be involved with any metals recycling. Whenever practicable, materials generated during demolition would be used for the construction of the new water reservoirs. The recycling plan would stipulate that after demolition and construction are completed, the amount of material recycled and waste generated would be reported to Environmental Flight for inclusion in the Base solid waste inventory. The majority of solid waste generated from demolition of the existing reservoirs would be concrete, a recyclable material. Because the reservoirs would be demolished sequentially, over 2 to 3 years, and the majority of the waste would be recycled, the solid waste generated from water reservoir replacements would contribute comparatively minor amounts of solid waste to the solid waste generated at the Base per year.

Waste will be handled and disposed of in accordance with applicable guidelines. If hazardous waste were generated, it would be labeled, stored, and managed in accordance with all applicable laws and regulations. Compliance with standard waste handling and disposal guidelines would reduce potential impacts from waste handling and disposal to less than significant levels.

All three water storage facilities were constructed prior to 1960 and could contain hazardous materials like LBP or asbestos (primarily asbestos pipe). LBP and asbestos surveys would be conducted to determine the presence of any LBP or asbestos associated with the water reservoirs. Allowing hazardous waste to come into contact with people or the environment could have a significant impact on human or environmental health. If LBP or asbestos were present, an abatement plan would be prepared and implemented for the safe abatement of the hazardous materials, in accordance with all applicable health and safety and environmental regulations. The abatement plan, if needed, would be reviewed and approved by Environmental Flight and the Bioenvironmental Engineering Flight prior to the start of abatement. The abatement plan and any abatement work would be completed in accordance with federal, state, and local regulations and policies. Conducting LBP and asbestos surveys and implementing an abatement plan (if necessary) would reduce potential impacts from LBP or asbestos at the Proposed Action sites to less than significant levels.

The operation and maintenance practices at the water storage facilities would not change if the Proposed Action were implemented.

4.5 Water Resources, Floodplains, and Wastewater

4.5.1 Alternative 1 – No Action

If Alternative 1 is selected, no changes to water quality, flooding, or wastewater would occur. The three existing water reservoirs are deteriorating and would continue to deteriorate in the future. This deterioration could result in significant impacts to the water supply in the future.

4.5.2 Alternative 2 – Proposed Action

The Proposed Action sites are currently used for water storage. The facilities that would be created by the Proposed Action would be similar to and replace the current facilities. As shown on Figure 3-1, the surface water resources located adjacent to the reservoir sites are surface water ponds, wetlands, and the eastern branch of Union Creek (Travis AFB, 2002a and 2003a; CH2M HILL, 2000 and 2003; U.S. Fish and Wildlife Service, 1999). This section focuses the evaluation on water resources; wetlands are discussed in Section 4.6.

Water Supply

Under the Proposed Action, demolition of the existing water reservoirs and construction of replacement reservoirs could result in impacts to the water supply. However, demolition and construction would be phased so that only one water reservoir would be out of service at a time. This phasing would reduce impacts to the water supply during demolition and construction to less than significant levels.

After demolition and construction are complete, the Base would have larger, more reliable water reservoirs. The effects of the Proposed Action would be beneficial, because replacing the reservoirs would eliminate the existing tank deterioration and increase the Base's water storage capacity.

Water Quality

Construction could produce short-term impacts to the surface water quality from erosion during earth-moving activities. The Base currently has a stormwater permit and a stormwater pollution prevention plan. Stormwater discharge at the Base is regulated under the Travis Industrial Activities Storm Water Discharge Permit (Travis AFB, 2002a). A dig permit (60 AMW Form 55) would be obtained prior to construction. The project would comply with all applicable restrictions set forth in the stormwater permit, the stormwater pollution prevention plan, and the dig permit. Best Management Practices would be implemented in accordance with these permits to prevent erosion. Compliance with the relevant permits and implementation of Best Management Practices would reduce impacts to the surface water quality from construction activities or stormwater discharges to less than significant levels.

The Proposed Action would have no effect on water quality during long-term operations.

Flooding

Under the Proposed Action, the replacement water reservoirs would have approximately the same amount of impervious surface as the existing facilities. Implementing the Proposed Action would not decrease stormwater infiltration rates or increase the volume of stormwater runoff. Historically, there has been no flooding at the existing sites, and the stormwater drainage system on and adjacent to the sites is hydraulically adequate (CH2M HILL, 2000). Therefore, the Proposed Action would have no effect on flooding.

Wastewater

The Proposed Action would not increase the amount of sewage entering the sanitary sewer system or change conveyance patterns. The amount of wastewater generated would not change from current conditions.

4.6 Biological Resources – Federal- and State-listed Threatened or Endangered Species

This section analyzes the potential for adverse impacts to biological resources, such as habitat loss, from implementation of the No Action Alternative and the Proposed Action.

4.6.1 Alternative 1 – No Action

The No Action Alternative would not result in construction or other changes to the physical environment and, therefore, would not result in impacts to biological resources.

4.6.2 Alternative 2 – Proposed Action

There are no wetlands on the reservoir sites. Figure 3-1 shows wetlands near water reservoir Buildings 1520 and 1516 (Travis AFB 2002a and 2003; CH2M HILL, 2003). However, after field review of wetland vegetative characteristics, it was determined that wetlands near the two reservoirs would not be affected by the Proposed Action. Exclusion fencing and an environmental monitor would be used to keep construction equipment away from these areas. Standard Best Management Practices, such as silt fencing, would also be used to avoid impacts to the adjacent wetlands. Therefore, impacts to wetlands during demolition and construction would be less than significant.

Surveys conducted in 1991, 1995, and 2001 to determine the potential presence of special-status flora, fauna, or habitats did not identify any special-status species or their habitats at the sites. However, in 1999, the Burke/Castle Terrace area, which is adjacent to water reservoir Building 1516 and surrounds water reservoir Building 1520, was surveyed for all potential threatened and endangered species. Two species, the vernal pool fairy shrimp, and Contra Costa goldfields were found in the area surrounding Building 1516. A dead California tiger salamander also was found in this area; however, it is unlikely that it was breeding in the Burke/Castle Terrace area because no other salamanders were observed during the shrimp surveys. It is believed that the salamander was moving through the site from a breeding pond outside the Proposed Action site. Breeding habitat is not present at the reservoir site for the California tiger salamander, and suitable habitat for Contra Costa goldfields and vernal pool fairy shrimp is lacking. Because of the lack of suitable habitat, threatened or endangered species are not expected to occur; therefore, no impacts to these species would occur as a result of the Proposed Action.

4.7 Socioeconomic Resources

The socioeconomic conditions of the region could be affected if implementation of the No Action Alternative or the Proposed Action caused changes in the rate of population growth, the demographic characteristics of the Base or Solano County, or employment or the economic activity onbase or in the county. This section evaluates potential impacts to socioeconomic resources.

4.7.1 Alternative 1 – No Action

Selection of the No Action Alternative would result in no changes to the socioeconomic resources at the Base or to Solano County.

4.7.2 Alternative 2 – Proposed Action

Implementation of the Proposed Action would have a temporary, beneficial impact on socioeconomic resources because it would require a temporary increase of approximately 30 civilian contract employees (construction workers) at the Base. Given the ample supply of construction labor in the region, it is anticipated that construction workers would commute to the work site and would not require temporary housing.

The Proposed Action would not result in long-term changes to socioeconomic conditions. The personnel who currently operate the water reservoirs would operate the new water

reservoirs. The Proposed Action would not result in changes to onbase or regional populations.

The expenditure of approximately \$8 million for the proposed construction project is minor compared to ongoing construction activities in the region, and would have no appreciable effect on the regional economy. However, there would be minor, short-term economic benefits to local convenience businesses from construction workers purchasing meals, gas, and other commodities in the vicinity of the Base. The impacts to socioeconomic conditions from temporary employment would be beneficial, but negligible compared to the Base or the county economy.

4.8 Cultural Resources

The following laws and regulations govern cultural resources management at Travis AFB (Travis AFB, 2003b):

- Antiquities Act of 1906 (16 USC Sections 431 through 433; 34 Stat. 225)
- National Historic Preservation Act of 1966, as amended (16 USC Section 470)
- Native American Graves Protection and Repatriation Act of 1990 (25 USC Sections 3001 through 3013)
- Archaeological Resources Protection Act of 1979 (16 USC Sections 470aa through 47011)
- Archaeological and Historic Data Preservation Act of 1974 (16 USC Sections 469 through 469c)
- American Indian Religious Freedom Act of 1978, as amended (42 USC Sections 1996 and 1996a)
- NEPA (42 USC Sections 4321 through 4370c)
- AFI 32-7065, Cultural Resources Management
- Protection of Historic Properties (36 CFR Section 800)
- National Register of Historic Places (36 CFR Sections 60, 61, 63, and 68)
- World Heritage Convention (36 CFR Section 73)
- Waiver of Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act (36 CFR Section 78)
- Curation of Federally-Owned and Administered Archeological Collections (36 CFR Section 79)
- Preservation of American Antiquities (43 CFR Section 3)
- Protection of Archaeological Resources (43 CFR Section 7)
- Native American Graves Protection and Repatriation Act (43 CFR Section 10)

- Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation
- Legacy Resource Protection Program Act of 1992 (Public Law No. 101-511, Section 8120)
- Protection and Enhancement of the Cultural Environment (EO 11593)
- Accommodation of Sacred Sites (EO 13007)
- Consultation and Coordination with Indian Tribal Governments (EO 13175)

The primary statutes requiring federal agencies to protect cultural resources are the National Historic Preservation Act, EO 11593, the Archaeological and Historic Preservation Act, and the Archaeological Resources Protection Act (URS, 2004). The Cultural Resource Manager, under the supervision of the Environmental Flight Chief, is responsible for managing natural and cultural resources at Travis AFB.

4.8.1 Alternative 1 – No Action

No cultural resources have been identified at or near water reservoir Buildings 1516, 1518, and 1520, and neither demolition nor construction would take place under this alternative. Travis AFB was surveyed for historic places in accordance with Section 110 of the NHPA and the three reservoirs were not identified as historic (Travis AFB, 2003b). Therefore, no impacts to cultural resources would occur under the No Action Alternative.

4.8.2 Alternative 2 – Proposed Action

There are no known archeological sites, historic buildings, or other culturally sensitive areas at or adjacent to the proposed sites for Alternative 2 (Travis AFB, 2003b). If cultural or archaeological resources were disturbed during construction, the impact would be considered significant. Therefore, prior to construction, a dig permit (60 AMW Form 55) would be acquired from 60 CES/CEV and a contingency plan would be prepared requiring the following:

- All activities would take place in compliance with the Travis AFB Cultural Resource Management Plan (Travis AFB, 2003b)
- If human remains or archaeological or cultural artifacts were discovered during construction, work would cease and the Cultural Resource Manager would be contacted.

Since there are no known cultural resources at or near the Proposed Action site, no effect on this resource from the Proposed Action is anticipated. If an unexpected cultural resource were encountered, adherence to the dig permit and implementation of the contingency plan would reduce the potentially significant impact to less than significant levels.

4.9 Land Use

This section discusses the potential effects to land use from either of the project alternatives. Land use at Travis AFB is described in the Travis AFB General Plan (Travis AFB, 2002a).

4.9.1 Alternative 1 – No Action

Under the No Action Alternative, demolition of the current water reservoirs and construction of replacement water reservoirs would not occur, and there would be no change to the existing land use.

4.9.2 Alternative 2 – Proposed Action

According to the Travis AFB General Plan land use maps, the existing and future land use designations for the Proposed Action sites are industrial. This alternative proposes demolition of the current water reservoirs and construction of replacement water reservoirs, an operation that is mission-critical and would be compatible with the current and future land use designations. There are no land use restrictions that would conflict with the Proposed Action. Because the Proposed Action would not change the land use at the site from existing conditions, no impact to land use is anticipated from the Proposed Action.

4.10 Transportation System

4.10.1 Alternative 1 – No Action

Under the No Action Alternative, neither demolition nor construction would occur and existing facilities would continue to be used. Current traffic levels and patterns would be maintained.

4.10.2 Alternative 2 – Proposed Action

The roadways affected by the construction traffic, including travel by construction workers in their personal vehicles to the construction site, would be the main Base thoroughfares, Turner Drive and Cannon Drive. According to the Travis AFB General Plan, there are no significant transportation or parking issues associated with any of the roadways that would be used to gain access to the Proposed Action sites (Travis AFB, 2002a). Materials needed for construction of the new water reservoirs and resulting from the demolition of the existing reservoirs would be transported using the Base transportation system. The water reservoirs would be demolished and constructed in phases, so materials transport would occur intermittently, as needed. Although materials transport would involve truck trips, potential traffic impacts resulting from the proposed construction would be temporary and minor in comparison to overall Base traffic. Impacts to the transportation system from the Proposed Action would be less than significant.

4.11 Airspace/Airfield Operations

4.11.1 Alternative 1 – No Action

No change in airspace or airfield operations would result from the No Action Alternative.

4.11.2 Alternative 2 – Proposed Action

The replacement water reservoirs would be located outside airspace or airfield operational areas. Neither demolition nor construction would impact airspace or airfield operations areas.

4.12 Safety and Occupation Health

4.12.1 Alternative 1 – No Action

Implementing the No Action Alternative would not change health or safety conditions. Construction would not be required under this alternative; therefore, no changes or impacts to ongoing safety and occupational health practices would occur.

4.12.2 Alternative 2 – Proposed Action

Implementing Alternative 2 would require demolition of the current facilities and construction of new facilities, involving military and civilian personnel. Implementation of the Proposed Action would follow applicable rules and regulations regarding safety and occupational health. A health and safety plan for construction would be prepared that would include requirements, such as shoring for excavations and removal of the underground portions of reservoir Building 1516. LBP and asbestos surveys would be completed prior to construction. If LBP or asbestos were discovered, an approved abatement plan would be adopted that would stipulate the precautions necessary to protect worker health and safety. Construction areas would be secured as necessary to prevent unauthorized personnel from entering the work sites or excavations.

In accordance with the Occupational Safety and Health Act, all workers would be provided with appropriate personal protective equipment, including required traffic safety equipment. Personal protective equipment would include, but not be limited to, approved hard hats, safety shoes, gloves, goggles, eye/face protection, safety belts, harnesses, respirators, hearing protection, and traffic safety vests. The potential for adverse impacts to safety and occupational health are expected to be minor and limited to the duration of demolition and construction.

Impacts to public health from operation of the reservoirs are not anticipated.

4.13 Environmental Management (Including Geology, Soils, and Pollution Prevention)

Travis AFB has procedures in place for pollution prevention that conform to applicable federal, state, and local regulations, including the following:

- AFI 32-7080, Pollution Prevention Program (Air Force, 1994b)
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition

- Travis AFB Instruction 32-206, Resource, Recovery and Recycling Program (Travis AFB, 2000)

The Proposed Action would comply with these procedures. All project alternatives would generate waste. Compliance with pollution prevention procedures would reduce potential impacts to less than significant levels.

4.13.1 Alternative 1 – No Action

There would be no change to geology, soils, or pollution prevention if the No Action Alternative were implemented.

4.13.2 Alternative 2 – Proposed Action

No important geological or soil resources are present in the area of the Proposed Action. Construction of Alternative 2 would temporarily disturb soils during demolition and construction. The area that would be disturbed would be approximately 4.5 acres for all three reservoirs. No rare or valuable soils would be disturbed. Clean fill would be used to backfill the subsurface portion of Building 1516. Therefore, potential impacts to geology or soils associated the Proposed Action would be less than significant.

Generation and management of waste during demolition and construction is expected to meet the pollution prevention goals set in the Travis AFB Pollution Prevention Management Action Plan. See Section 4.4.2 for more information about waste management.

Waste production during operation of the building would be approximately equal to the current levels; therefore, there would be minimal change as a result of implementing the Proposed Action, compared to current conditions.

The new reservoirs would be designed and constructed in accordance with accepted engineering practices for seismic activity.

4.14 Environmental Justice

4.14.1 Alternative 1 – No Action

Implementation of the No Action Alternative would not affect minority or low-income populations, or children.

4.14.2 Alternative 2 – Proposed Action

No minority or low-income populations in the surrounding area would be affected by the construction of the Proposed Action. In addition, the Proposed Action would not cause adverse impacts with the potential to disproportionately affect such populations if they were present.

Construction sites can be attractive, and therefore dangerous, to children. The land adjacent to the Proposed Action sites is classified as residential housing and includes family housing. Water reservoir Building 1518 is closest to housing and is approximately 100 feet from the nearest house. Water reservoir Buildings 1520 and 1516 are approximately 150 and 300 feet from the nearest house, respectively. Building 1516 is approximately 800 feet north of the

Child Development Center and 1,200 feet northeast of Center Elementary School. The construction sites, excavations, and materials would be properly secured during demolition and construction to prevent children from accessing the sites. Securing the sites during demolition and construction would reduce danger to children to less than significant levels.

Hazardous wastes produced at the site would be handled and disposed of in accordance with applicable regulations and the Base Hazardous Waste Management Plan, and would not pose a disproportionate risk to minority populations.

4.15 Indirect and Cumulative Impacts

Indirect impacts are defined by the CEQ in 40 CFR Section 1508.8 as those “which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”

Indirect impacts of the Proposed Action have been addressed in the preceding resource-specific analyses. Implementing the Proposed Action is not expected to result in significant indirect impacts to environmental or socioeconomic resources. The Proposed Action would not result in significant growth-inducing effects, induced changes in population, or related effects.

Cumulative impacts are defined by the CEQ in 40 CFR Section 1508.7 as “impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.”

Projects considered in this EA for cumulative impact are those that are ongoing or planned to begin within the next 3 years at Travis AFB. Projects being considered beyond 3 years are too uncertain to be evaluated. The following actions, organized by start date, are the foreseeable future actions that could occur at Travis AFB (URS, 2004):

- **Fiscal Year 2005**
 - Construct C-17 Roads and Utilities (40,000 ft² for roadways)
 - Construct Fire/Crash Rescue Station (30,192 ft²)
 - Construct Coast Guard Facility (103,000 ft²)
 - Replace Transportation Squadron wash rack
- **Fiscal Year 2006**
 - Replace water reservoir Building 1520
 - Construct C-17 Maintenance Training Facility, AGE Facility, Nose Dock, Engine Storage Facility, Munitions Maintenance Facility (132,750 ft²)
 - Construct Phase 1 of the Air Mobility Operations Group Center (92,000 ft²)
 - Construct Security Forces Armory/Combat Arms Campus Facility (18,000 ft²)
 - Construct In-flight Kitchen/Fleet Service Facility (23,000 ft²)

- Replace heating, ventilation, and air conditioning, Building 878
 - Renovate West/Center Island, Building 810 (renovate West Island and Center Island upstairs and downstairs office/work space; upgrade/repair area fire suppression, HVAC, electrical, lighting, lower ceilings; replace doors, bathroom facility, and plumbing; paint as required; update phone and computer line service)
 - Repair 600 Ramp, Spots 605 through 607
 - Paint Shop Floor, Building P-41 (S/M)
 - Repair flooring at Passenger Terminal, Building 3 (replace old and damaged flooring in the following areas of the passenger terminal with Marmoleum®: telephone communications/security monitor room, dispatch office, vehicle control NCO's office, building custodian's office, worker's break room, and all hallways)
 - Repair Aircraft Hangar floor, 809 (R/M) (clean, repair, and paint hangar floor with poly-based paint/nonskid floor coating, paint function lines as required)
 - Install additional lighting, Building 977 (install additional lighting along west side fence line)
 - Demolish the following facilities:
 - Building 235 (Audio Visual)
 - Building 238 (Reserve Forces Operational Training)
 - Building 242 (Squadron Operations)
 - Building 572 (Warehouse)
 - Building 690 (Thrift Shop)
 - Building 755 (Shop Aircraft General Purpose)
 - Building 828 (Security Forces, Control)
 - Building 943 (Security Forces, Operations)
- **Fiscal Year 2007**
- Replace water reservoir Building 1516
 - Construct Phases 2 and 3 of the Air Mobility Operations Group Center (610,000 ft²)
 - Demolish Building 882 (Civil Engineering Maintenance Shop)
 - Renovate Hangar 808 (R/M)
 - Repair hangar floor, Building 808 (paint hangar floor with nonskid materials and finish with gloss coat)
 - Remove water filter system (remove water filter recycle system from floor system rerouted to the sanitary sewer system; may require an oil-water separator)
 - Construct C-17 two-bay hangar, addition/alteration to Composite Shop, Wheel and Tire Shop, Taxiway Repairs (719,730 ft²)
 - Construct Passenger Terminal (94,519 ft²)

Replacement of water reservoir Building 1518 has not yet been programmed and would be conducted, at the earliest, in fiscal year 2008.

Alternative 1, the No Action Alternative, would have no potential for cumulative impacts. Potential cumulative impacts to the resource areas from the Proposed Action are discussed below.

The potential for cumulative impacts attributable to air quality would be from multiple construction projects occurring simultaneously. The potential impacts to air quality from construction are discussed in Section 4.2. Not all of the actions listed would be constructed simultaneously. The Proposed Action would conform to the SIP and not be regionally significant. Each project would implement measures that reduce emissions to less than significant levels. Provided that the projects are not constructed simultaneously, the SIP measures for each project would be sufficient to prevent significant cumulative impacts from construction activities.

As discussed in Section 4.5, the Proposed Action could result in impacts to water resources during construction. Earth-moving activities associated with multiple construction projects occurring simultaneously could affect water resources by decreasing the quality of surface water runoff during storm events. Travis AFB currently has a basewide stormwater permit and a basewide stormwater pollution prevention plan. Impacts from multiple actions would be addressed and reduced to less than significant levels by adhering to the basewide permits and programs that are currently in place.

The stormwater drainage system and the sanitary sewer system are inadequate for current Base needs. Future actions would put additional strain on both systems. The Base has conducted studies to define system deficiencies and is developing remedial measures. The Proposed Action would not put any further strain on the stormwater or sanitary sewer systems; therefore, there would be no cumulative impacts to those systems from this action.

4.16 Unavoidable Adverse Impacts

As detailed in the preceding resource-specific analyses, no significant unavoidable adverse impacts are expected from the construction or operation of the water reservoirs under the Proposed Action Alternative. Adverse impacts resulting from construction of the water reservoirs are anticipated to be minor and short in duration.

4.17 Relationship between Short-term Uses and Enhancement of Long-term Productivity

The three reservoirs store water that is used to meet the potable water needs of Travis AFB. The potable water needs at the Base include drinking, washing, and firefighting capacity. Under the Proposed Action, each water reservoir would be demolished and replaced at the existing location. The purpose of the Proposed Action is to construct water reservoirs that are adequate to meet California Health and Safety Code requirements, meet the storage requirements of the Travis AFB Water Master Plan, and meet the potable water needs of Base operations. The existing water reservoirs are deteriorating and their capacity is not adequate for Base needs. The problems associated with the existing water reservoirs would be exacerbated in the short term because each reservoir would have to be demolished before it could be replaced. Replacement of the water reservoirs as outlined in the Proposed

Action would alleviate the problems associated with the existing reservoirs, enhancing the long-term productivity.

4.18 Irreversible and Irretrievable Commitment of Resources

The demand for electricity for security lighting and pumping water from the tanks would be identical to current needs. Therefore, the need for additional resources is not expected during the long-term use of the water reservoirs.

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Common Outdoor Sound Levels

Common Indoor Sound Levels

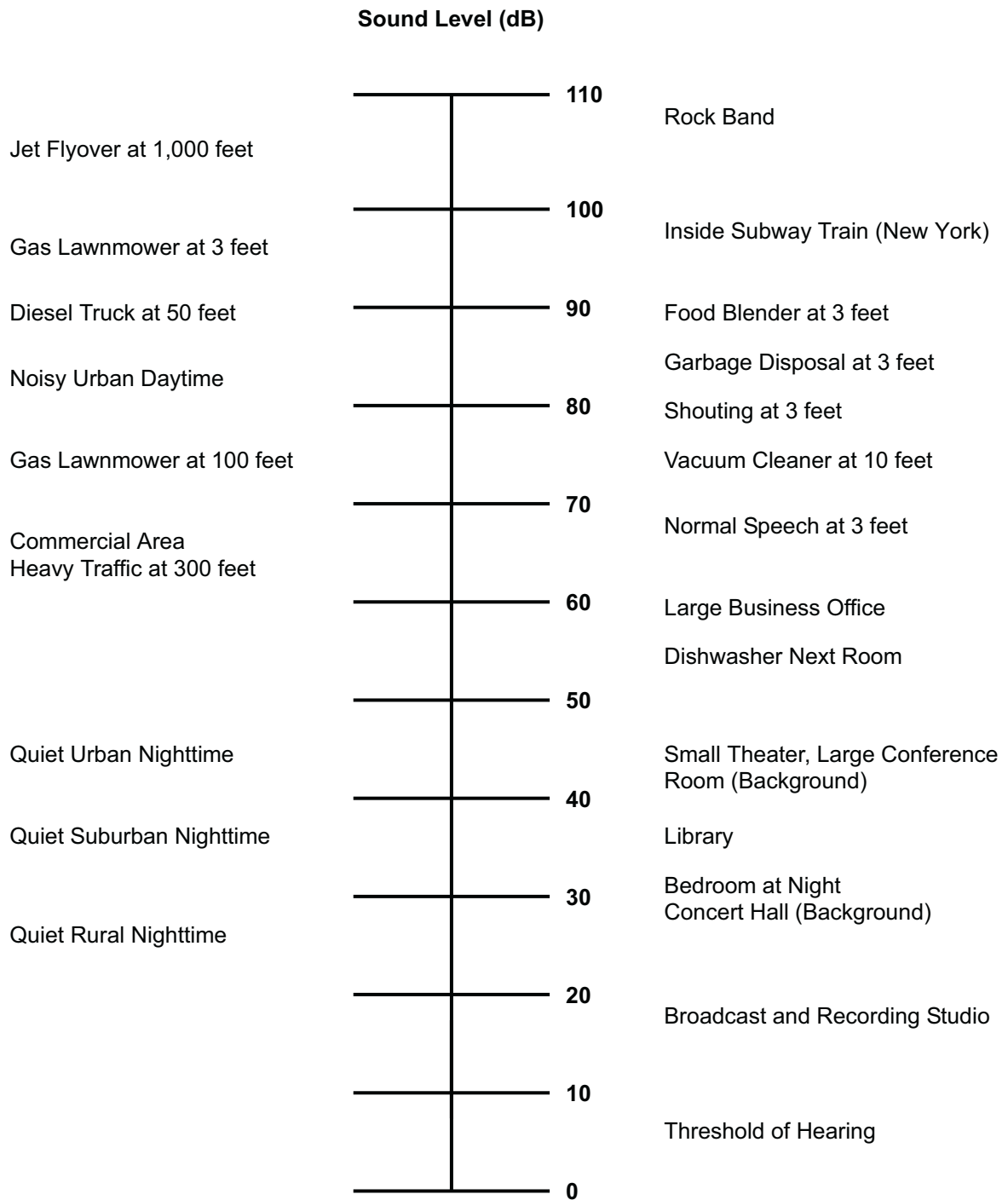


FIGURE 4-1
COMPARATIVE SOUND LEVELS
 ENVIRONMENTAL ASSESSMENT FOR THE
 REPLACEMENT OF WATER RESERVOIRS
 TRAVIS AIR FORCE BASE, CALIFORNIA
CH2MHILL

SECTION 5.0

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Tony Jaegel	B.S., Environmental Resources Engineering	12 years	Project Manager
Karin Lilienbecker	M.S., Biology	11 years	Task Manager, Environmental Planner
Ed McCarthy	B.S., Toxicology	5 years	Environmental Scientist
Christine Roberts	M.C.P., Architecture and Urban Planning	14 years	Senior Reviewer
Mike Urkov	M.A., Water Resources Administration	11 years	Regional Senior Review

SECTION 6.0

List of Agencies and People Consulted and/or Provided Copies

The following people were consulted during preparation of this EA:

- Captain Jeremiah Frost, CES/CEV
- Robert Holmes, CES/CEV
- Rodolfo Pontemayor, CES/CEV
- Wayne Williams, CES/CEP

Travis AFB will coordinate distribution of this EA to the following public and regulatory agencies:

- **Federal**
 - U.S. Environmental Protection Agency, Region 9
Director, Office of Federal Activities
75 Hawthorne Street
San Francisco, California 94105
 - U.S. Department of the Interior
U.S. Fish and Wildlife Service
CA/NV Operations Office
2800 Cottage Way, Room W-2606
Sacramento, California 95825
- **State**
 - State of California Clearinghouse
Governor's Office
1400 Tenth Street, Room 121
Sacramento, California 95814

The public was offered a 15-day period to comment on this EA. A public notice was published in *The Vacaville Reporter* on March 10 and 12, 2005, and the EA was available for public review at the Fairfield-Suisun Community Library, the Vacaville Public Library, and the Travis AFB Library. A copy of the proof of publication is included in Appendix E.

SECTION 7.0

Works Cited

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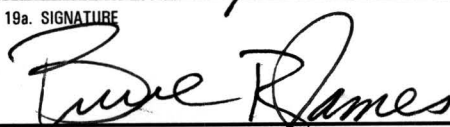
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Appendix A
Air Force Form 813

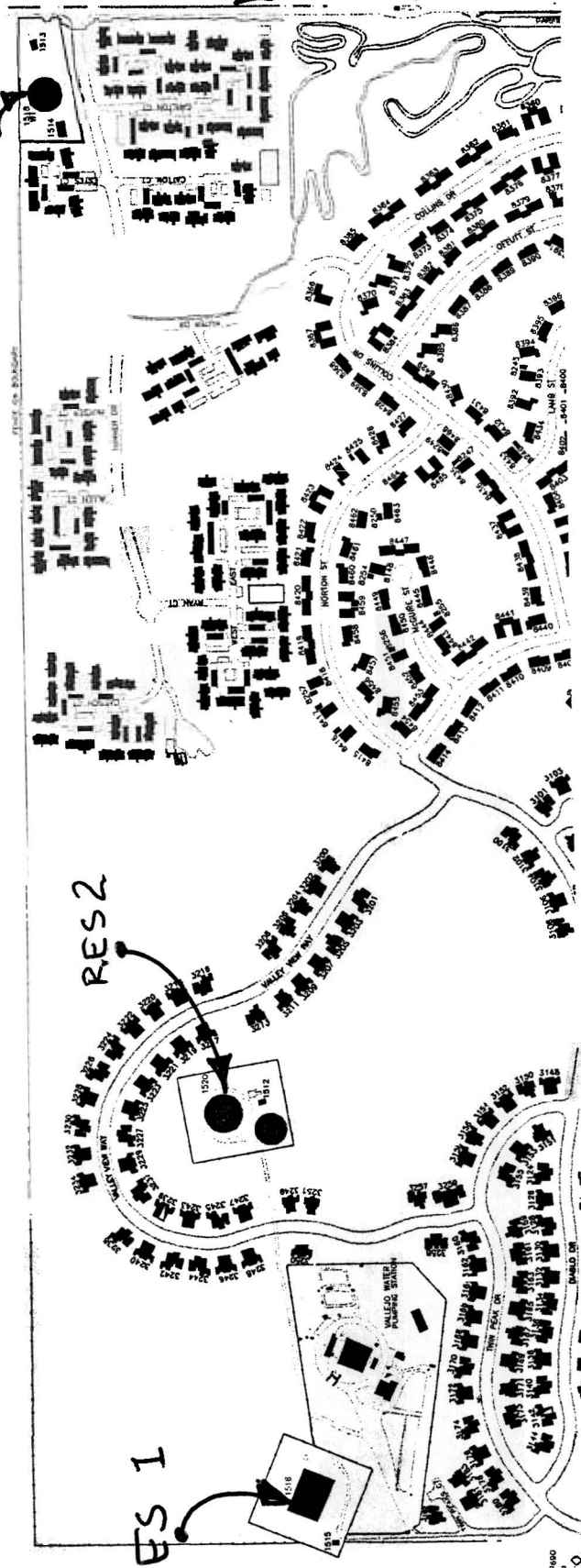
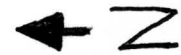
REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS			Report Control Symbol RCS: 02-06	
INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).				
SECTION I - PROPONENT INFORMATION				
1. TO (Environmental Planning Function) 60 CES CEV		2. FROM (Proponent organization and functional address symbol) 60 CES CE C		2a. TELEPHONE NO. 4-5794
3. TITLE OF PROPOSED ACTION New Water Reservoirs to replace 1516, 1518 and 1520				
4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date) Travis AFB water master plan and State of California Standards call for 10.5 million gallons of water storage at Travis. Travis AFB currently has 6.2 million of storage capacity of which 3.7 is in deteriorated 1950's vintage concrete tanks.				
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.) Replace three old deteriorated concrete water storage totaling 3.7 million gallons with three new steel tanks totaling 8 million gallons.				
6. PROPONENT APPROVAL (Name and Grade) Ed Pieterse, Engineer		6a. SIGNATURE 		6b. DATE 20020214
SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)				+ 0 - U
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential, encroachment, etc.)				RA
8. AIR QUALITY (Emissions, attainment status, state implementation plan, etc.)				RA
9. WATER RESOURCES (Quality, quantity, source, etc.)				97
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.)				SEE 14 BELOW ✓
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)				RA/RA
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, threatened or endangered species, etc.)				RA
13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.)				RA
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)				Flourene spill at Res 3 may impact soil
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)				RA
16. OTHER (Potential impacts not addressed above.)				JA Need to ensure project budget includes cost for EA/EIS ✓
SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION				
17. <input checked="" type="checkbox"/> PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____ ; OR <input type="checkbox"/> PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED. NEW LARGER TANKS + FLOURENE SPILL				
18. REMARKS Please see attached comments concerning recycling and LBP asbestos. Also see JA note regarding EA/EIS costs in project budget. Please contact Bob Holmes, 4-3897 to provide further information to assist w/EA development. BBT				
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) BRUCE R. JAMES Chief, Environmental Flight		19a. SIGNATURE 		19b. DATE 13 Mar 02

NORTH
GATE

RES 3

RES 2

RES 1



PAGE 1 OF 1 PAGES

DATE: 22 FEB 02

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ENGINEERING REVIEW COMMENTS


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<input type="checkbox"/> CONCEPT DESIGN		<input type="checkbox"/> SERVICE CONTRACTS		PROJECT DESCRIPTION	
<input type="checkbox"/> % DESIGN SUBMITTAL		<input type="checkbox"/> OTHER _____			
LOCATION				REVIEWED BY DOLORES TIBURCIO <i>Dr</i>	
<input type="checkbox"/> ARCHITECTURAL	<input type="checkbox"/> ELECTRICAL	<input type="checkbox"/> CEO/OPERATIONS	<input type="checkbox"/> SABER		
<input type="checkbox"/> CIVIL & STRUCTURAL	<input type="checkbox"/> PROGRAMMING	<input type="checkbox"/> CER	<input type="checkbox"/> OTHER		
<input type="checkbox"/> MECHANICAL	<input type="checkbox"/> CONSTRUCTION MGT	<input checked="" type="checkbox"/> CEV/ENVIRONMENTAL MGT			
DRAWING NO. OR PARA NO.	ITEM NO.	COMMENTS	ACTION		
		Contractor NEEDS TO SUBMIT Recycling PLAN			
		RECYCLING REQUIREMENTS:	<i>for Concrete</i>		
		PER ⁴⁰ CFR 246.200, EO 12088,			
		CAL Integrated Waste Management			
		Act - AB 939, AFI 32-7080			
		Recycling is mandatory; TRAVIS	AFB INST. 32-206		
		* Metal cans, glass, plastics			
		NOS: <i>100</i> , cardboard, news			
		paper, magazines, white &			
		colored paper			
		* Fluorescent Light Bulbs			
		Per EPA, CAL EPA classifies			
		them as a Universal Waste			
		* Per Dept. of the Air Force memo			
		dated 26 Jan '99 - Construction			
		debris is counted in our			
		solid waste diversion			
		calculation. Construction			
		debris materials such as wood			
		metal, concrete, asphalt			
		can be recycled.			
		* Report tonnage amount to			
		the Environmental Flight			
		Bld. 246, FAX: 424 5105			
		POL: D. TIBURCIO, 424 5127			
		(see attached fact sheet)			
		* All METALS go			
		thru DRMO			



DoD Measures Of Merit

The Department of Defense (DoD) established a new Pollution Prevention Measures of Merit (MoM) effective fiscal year (FY) 1999. The new *Non-Hazardous Solid Waste Diversion Rate* measure states: "By the end of FY 2005, ensure the diversion rate for non-hazardous solid waste is greater than 40 percent, while ensuring integrated non-hazardous solid waste management programs provide an economic benefit when compared with disposal using landfilling and incineration alone." [Note: the diversion rate is defined as the rate at which non-hazardous solid waste is diverted from entering a disposal facility, while disposal facilities are defined as either a landfill (containing both solid waste and inert material), or an incinerator.] The new MoM replaces two previous measures: *Non-Hazardous Solid Waste Disposal*, and *Non-Hazardous Solid Waste Recycling*, both of which were found in the DoD Instruction 4715.4 "Pollution Prevention." These two measures were cancelled at the end of FY 1998. The purpose of the new MoM is to help achieve the maximum economically feasible non-hazardous solid waste diversion rate.



Under the new MoM, all installations will report on two issues: 1) their diversion rate [which includes the diversion of construction and demolition debris for the first time], and 2) cost avoidance (or incurred additional costs), which result from the use of integrated solid waste management. The amount of solid waste disposed through waste-to-energy incineration may also be reported. The new MoM contains an attachment that identifies how to accomplish the diversion rate calculation. Acceptable diversion methods are composting, mulching, recycling, reuse, and donation. One very important consideration in the new Measure of Merit is that while achieving the 40 percent diversion rate, the cost of integrating non-hazardous solid waste management must be less than or equal to the original cost of disposing of solid waste by the traditional methods of incineration or landfilling. The only exemptions to the 40 percent diversion rate requirements are installations that generate less than one ton of solid waste per day. However, all Air Force installations will be required to provide detailed reporting of non-hazardous solid waste using the new diversion rate on a quarterly basis (including installations generating less than one ton of solid waste per day). Major Commands (MAJCOMs) will be required to report the quarterly submissions semi-annually via the Air Force Environmental In-Progress Review. For more information, or for copies of related documents, please contact PRO-ACT at DSN 240-4240.

AF-EMIS Receives Y2K Compliance Certification!

The Air Force Environmental Management Information System (AF-EMIS) program received formal Y2K compliance certification on 13 October 1999. Tests conducted last summer by the Environmental Quality Directorate, Headquarters Air Force Center for Environmental Excellence (HQ AFCEE/EQ), and Research Dynamics, the prime contractor for AF-EMIS, concluded that the program will accept dates with the year 2000 without any adverse effects. This information was then sent through the Management and Logistics Division, Operations Support Directorate, Headquarters Air Force Civil Engineer Support Agency (HQ AFCEA/CEOM), to the Air Force Y2K Office (AFCEA/ITY) at Scott AFB, IL who issued the compliance certification. For additional information on AF-EMIS and its Y2K compliance certification, please contact Mr. William Kivela, P.E., AF-EMIS Program Manager, HQ AFCEE/EQT, DSN 240-3769.



Fact Sheet Updates on the Web

PRO-ACT has updated its *Asbestos*, *Safe Drinking Water Act*, and *Polychlorinated Biphenyls (PCBs)* Fact Sheets to reflect the appointment of a new point of contact at HQ AFCEE/EQ. In response to a question from a reader, we also updated our *Asbestos* Fact Sheet to clarify language on the applicability of notification/emission control requirements.

Appendix B
Air Force Form 1391

1. COMPONENT AIR FORCE	FY 2006 PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION TRAVIS WATER SYSTEM ANNEX NO 1, CALIFORNIA		4. PROJECT TITLE REPLACE RESERVOIR 1, 1516		
5. PROGRAM ELEMENT 41896	6. CATEGORY CODE 841-425	7. PROJECT NUMBER XDAT061008	8. PROJECT COST (\$000) EEIC 522 2,739.8	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT	COST
PRIMARY FACILITIES				1,450.0
STEEL GROUND TANKS	LS			(1,000.0)
CONCRETE FOUNDATION	LS			(300.0)
PIPING	LS			(150.0)
SUPPORTING FACILITIES				610.0
LANDSCAPING	LS			(170.0)
DEMOLITION	LS			(165.0)
EQUIPMENT	LS			(110.0)
ELECTRICAL	LS			(110.0)
TANK PROTECTION	LS			(55.0)
SUBTOTAL				2,060.0
SUPERVISION, INSPECTION, AND OVERHEAD (8 %)				164.8
PROFIT AND OVERHEAD (25 %)				515.0
TOTAL FUNDED COST				2,739.8
UNFUNDED COST (0 %)				0.0
TOTAL REQUEST				2,739.8
10. Description of Proposed Work: Remove existing reservoir 1516 and replace with a new 3 million gallon reservoir.				
11. Requirement: As Required. <u>PROJECT:</u> Replace Reservoir 1516 (Current Mission) <u>REQUIREMENT:</u> A sustainable, reliable reservoir capable of shouldering approximately 30% of the total water demands of Travis AFB. <u>CURRENT SITUATION:</u> The reservoir is capable of containing 700,000 gallons, which is 2.3 million gallons less than the water capacity as required by the Travis AFB Water Master Plan. The reservoir was originally constructed more than 50 years ago, and is showing many signs of age and delapidation. <u>IMPACT IF NOT PROVIDED:</u> Rservoir 1516 will provide less than the minimum water demand requirement for this facility, which severely hinders the ability to support a large base population. The old reservoir will also continue to age, which could result in a larger replacement cost in the future.				

1. COMPONENT AIR FORCE	FY 2006 PROJECT DATA (computer generated)			2. DATE
3. INSTALLATION AND LOCATION TRAVIS WATER SYSTEM ANNEX NO 1, CALIFORNIA		4. PROJECT TITLE REPLACE RESERVOIR, 1520		
5. PROGRAM ELEMENT 41896	6. CATEGORY CODE 841-425	7. PROJECT NUMBER XDAT051073	8. PROJECT COST (\$000) EEIC 522 2,394	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT	COST
PRIMARY FACILITIES				1,195.0
STEEL GROUND TANKS	LS			(855.0)
CONCRETE FOUNDATION	LS			(270.0)
PIPING	LS			(70.0)
SUPPORTING FACILITIES				605.0
DEMOLITION	LS			(210.0)
LANDSCAPING	LS			(180.0)
EQUIPMENT	LS			(110.0)
ELECTRICAL	LS			(70.0)
TANK PROTECTION	LS			(35.0)
SUBTOTAL				1,800.0
SUPERVISION, INSPECTION, AND OVERHEAD (8 %)				144.0
PROFIT AND OVERHEAD (25 %)				450.0
TOTAL FUNDED COST				2,394.0
UNFUNDED COST (0 %)				0.0
TOTAL REQUEST				2,394.0
10. Description of Proposed Work: Remove existing reservoir 1520 and replace with a new 3 million gallon reservoir.				
11. Requirement: As Required. <u>PROJECT:</u> Replace Reservoir 1520 (Current Mission) <u>REQUIREMENT:</u> A sustainable, reliable reservoir capable of shouldering approximately 30% of the total water demands of Travis AFB. <u>CURRENT SITUATION:</u> The reservoir is capable of containing 2 million gallons, which is 1 million gallons less than the capacity as required by the Travis AFB Water Master Plan. The reservoir has many leaks, which decreases the efficiency and true capacity of the reservoir. <u>IMPACT IF NOT PROVIDED:</u> The reservoir will continue to lag behind the master plan water demands, which severely hinders the ability to adequately support a large base population. Leaks will continue to increase in number and severity, which could result in a catastrophic failure.				

Appendix C

Air Emission Calculations

Air Emission Calculations

C.1 Demolition and Construction Emissions Summary

Table C-1 provides a summary of the demolition and construction emissions associated with the Proposed Action from 2006 through 2008. Detailed emission calculation methodologies are described in the following sections.

TABLE C-1

Summary of Emissions from Proposed Replacement of Water Reservoirs

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California – Air Emission Calculations

Emission Type and Year	Annual Emissions (tpy)			
	VOC	NO _x	CO	PM ₁₀
Demolition				
2006	NA	NA	NA	2.1
2007	NA	NA	NA	0.7
2008	NA	NA	NA	1.0
Construction				
2006	1.0	14.7	3.2	1.0
2007	1.7	24.7	5.4	1.8
2008	0.6	9.4	2.1	0.7
Total Emissions				
2006	1.0	14.7	3.2	3.1
2007	1.7	24.7	5.4	2.4
2008	0.6	9.4	2.1	1.7

Notes:

tpy = tons per year

VOC = volatile organic compound

NO_x = nitrogen oxide

CO = carbon monoxide

PM₁₀ = particulate matter less than 10 microns

NA = not applicable

C.2 Estimation of Demolition Emissions

Existing water reservoirs would be demolished before construction of the new reservoirs. Fugitive dust (PM₁₀) is the primary emission type associated with demolition. The PM₁₀ demolition emission factor was obtained from Table 9-2 of the CEQA Air Quality Handbook (South Coast Air Quality Management District, 1993). Demolition emissions for each year were calculated by multiplying the emission factors by the cubic footage expected to be demolished in the year. The emission factors and the emissions from demolition of the existing reservoirs are shown in Table C-2.

TABLE C-2

Estimated Emissions during Demolition of the Existing Reservoirs

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California – Air Emission Calculations

Year	Total Demolition Volume (ft³)	Demolition Duration (days)	PM₁₀ Emission Factor (lb/ft³/day)	Total PM₁₀ Emissions (tpy)
2006	333,945	30	0.00042	2.10
2007	105,768	30	0.00042	0.67
2008	155,724	30	0.00042	0.98

Notes:

Demolition emission factors were obtained from Table 9-2 of the South Coast Air Quality Management District CEQA Handbook (1993).

ft³ = cubic feetlb/ft³/day = pounds per cubic foot, per day

C.3 Estimation of Construction Emissions

The construction emission factors of VOCs, NO_x, CO, and PM₁₀ were obtained from Table 9-1 of the CEQA Air Quality Handbook (South Coast Air Quality Management District, 1993). These emission factors were established based on regional averages, including onsite construction equipment and workers' travel. The emission factors for industrial facilities were used in the calculations. Total emissions in each year were calculated by multiplying the emission factors by the total square footage of the proposed construction of the year. The emission factors and the calculated emissions are shown in Table C-3.

TABLE C-3

Estimated Emissions during Construction of the New Reservoirs

Environmental Assessment for Replacement of Water Reservoirs, Travis Air Force Base, California – Air Emission Calculations

	Unit	VOC	NO_x	CO	PM₁₀
Emission Factor	(lb/construction period/ 1,000 ft ²)	32.79	481.88	104.79	34.22
Construction 2006	tpy	1.0	14.7	3.2	1.0
Construction 2007	tpy	1.7	24.7	5.4	1.8
Construction 2008	tpy	0.6	9.4	2.1	0.7

Notes:

Construction emission factors were obtained from Table 9-1 of the South Coast Air Quality Management District CEQA Handbook (1993).

lb/construction period/1,000 ft² = pounds per construction period, per 1,000 square feet

Assumptions:

Square footage of Building Construction for 2006: 60,984

Square footage of Building Construction for 2007: 102,366

Square footage of Building Construction for 2008: 39,204

C.4 Works Cited

South Coast Air Quality Management District. 1993. *CEQA Air Quality Handbook*. April.

Appendix D
Clean Air Act Conformity Applicability Analysis
for Replacement of Water Reservoirs at
Travis Air Force Base

Clean Air Act Conformity Applicability Analysis for Replacement of Water Reservoirs

D.1 Purpose

The U.S. Air Force is required to perform an air conformity applicability analysis to determine whether the replacement of water reservoirs at Travis Air Force Base (AFB), California, will comply with the U.S. Environmental Protection Agency's (EPA) Final Conformity Rule, 40 Code of Federal Regulations (CFR) 93, Subpart B (for federal agencies), and 40 CFR 51, Subpart W (for state requirements), of the amended Clean Air Act (CAA).

D.2 Background

EPA has issued regulations clarifying the applicability and procedures for ensuring that federal activities comply with the amended CAA. The EPA Final Conformity Rule implements Section 176(c) of the CAA, as amended in 42 U.S. Code 7506(c). This rule was published in the Federal Register on November 30, 1993, and took effect on January 31, 1994.

The EPA Final Conformity Rule requires all federal agencies to ensure that any federal action resulting in nonattainment criteria pollutant emissions conforms with an approved or promulgated state implementation plan (SIP) or federal implementation plan. Conformity means compliance with a SIP's or federal implementation plan's purpose of attaining or maintaining the National Ambient Air Quality Standards (NAAQS). Specifically, this means ensuring that the federal action will not (1) cause a new violation of the NAAQS; (2) contribute to any increase in the frequency or severity of violations of existing NAAQS; or (3) delay the timely attainment of any NAAQS interim or other attainment milestones. NAAQS are established for seven criteria pollutants, as follows:

- Ozone (O₃)
- Carbon monoxide (CO)
- Particulate matter equal to or less than 10 microns in diameter (PM₁₀)
- Particulate matter equal to or less than 2.5 microns in diameter (PM_{2.5})
- Nitrogen dioxide (NO₂)
- Sulfur dioxide (SO₂)
- Lead (Pb)

The current standards apply only to federal actions in NAAQS nonattainment or maintenance areas.

D.3 Summary of Air Pollutant Emissions and Regulatory Standards

The Proposed Action would be implemented in Solano County, California, which is designated nonattainment (other) for the 1-hour O₃ and nonattainment (marginal) for 8-hour O₃. The county is in attainment for all other criteria pollutants. In addition, the urbanized areas of Solano County, which include the area occupied by Travis AFB, are maintenance areas for CO under the *Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas* (California Air Resources Board [CARB], 1998). General conformity is being addressed for the Proposed Action. Air quality management in Solano County is under the jurisdiction of CARB, the Bay Area Air Quality Management District (BAAQMD), and EPA Region 9. The applicable General Conformity regulation is 58 FR 63214 (November 30, 1993).

The EPA Final Conformity Rule requires that total direct and indirect emissions of non-attainment and maintenance criteria pollutants, including O₃ precursors (volatile organic compounds [VOCs] and nitrogen oxides [NO_x]), be considered in determining conformity. The rule does not apply to actions where the total direct and indirect emission of non-attainment and maintenance criteria pollutants do not exceed threshold levels for criteria pollutants established in 40 CFR 93.135(b). Consequently, the applicable de minimis levels for the proposed Center project are 100 tons per year (tpy) for emissions of O₃ precursors (VOCs and NO_x), and 100 tpy for emissions of CO. Tables D-1 and D-2 present the de minimis thresholds of nonattainment and maintenance areas, respectively.

TABLE D-1

De Minimis Thresholds in Nonattainment Areas

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California – Clean Air Act Conformity Applicability Analysis for Replacement of Water Reservoirs

Pollutant	Degree of Nonattainment	De Minimis Threshold ^a
O ₃ (VOCs and NO _x)	Serious	50
	Severe	25
	Extreme	10
	Other O ₃ — outside an O ₃ transport region	100
O ₃ (VOCs)	Marginal and moderate – inside an O ₃ transport region:	50
O ₃ (NO _x)	Marginal and moderate – inside an O ₃ transport region:	100
CO	All	100
PM ₁₀	Moderate	100
	Serious	70
SO ₂ or NO ₂	All	100
Pb	All	25

^aDe minimis thresholds are listed in tpy. The bold number reflects the de minimis threshold used in this analysis.

Source: 40 CFR 93.135(b)

TABLE D-2

De Minimis Thresholds in Maintenance Areas

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California – Clean Air Act Conformity Applicability Analysis for Replacement of Water Reservoirs

Pollutant	Maintenance Area	De Minimis Threshold ^a
O ₃ (NO _x)	All	100
O ₃ (VOCs)	Inside an O ₃ transport region	50
	Outside an O ₃ transport region	100
CO	All	100
PM ₁₀	All	100
SO ₂ or NO ₂	All	100
Pb	All	25

^aDe minimis thresholds are listed in tpy. The bold number reflects the de minimis threshold used in this analysis.

Source: 40 CFR 93.135(b)

In addition to meeting de minimis requirements, a federal action must not be considered a regionally significant action. A federal action is considered regionally significant when the total emissions from the action equal or exceed 10 percent of the air quality control area's emissions budget for the applicable pollutant. If a federal action meets de minimis requirements and is not considered a regionally significant action, it is exempt from further conformity analyses, pursuant to 40 CFR 93.153(c).

D.4 Emission Calculations

D.4.1 Construction Emissions

Construction of the new reservoirs would be conducted from 2006 through 2008. The existing water reservoirs would be demolished before the construction of the new reservoirs. Because the primary emission type associated with demolition would be particulate matter, and the project is not subject to general conformity requirements for particulate matter, demolition emissions are not included in this applicability analysis.

Construction emissions are expected to occur as a result of engine exhaust from added vehicles trips of construction workers and offroad construction equipment, including earth-moving equipment and trucks. These emissions would primarily consist of NO_x, SO₂, particulate matter, CO, and VOCs. Because the project is only subject to general conformity requirements for NO_x, VOC, and CO, the emissions of SO₂ and particulate matter are not discussed in this applicability analysis.

The construction emissions of VOCs, NO_x, and CO were calculated according to the methodology provided in Chapter 9 of the *CEQA Air Quality Handbook* (South Coast Air Quality Management District, 1993), because BAAQMD does not have specific emission factors for construction projects. Emission factors from Table 9-1, for "Industrial" facilities, were used. These emission factors include onsite construction equipment and worker travel. The estimated construction emissions for each year are shown in Table D-3. Detailed construction emission calculations are provided in Appendix C.

TABLE D-3

Estimated Emissions during Construction of the Proposed Action

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California – Clean Air Act Conformity Applicability Analysis for Replacement of Water Reservoirs

Construction Year	Annual Emissions (tpy)		
	VOC	NO _x	CO
2006	1.0	14.7	3.2
2007	1.7	24.7	5.4
2008	0.6	9.4	2.1

D.4.2 Operation Emissions

The operation of the new reservoirs would be similar to operation of the existing reservoirs. There would not be any additional emission sources associated with operation of the new reservoirs; therefore, no emissions increases are expected.

D.4.3 Emissions Summary and Comparison to De Minimis Levels

Table D-4 compares the projected total air emissions during construction of the new water reservoirs and the de minimis thresholds. Emissions of VOCs, NO_x, and CO during construction would be below the de minimis thresholds of 100 tpy.

TABLE D-4

Comparison of Estimated Emissions and De Minimis Thresholds

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California – Clean Air Act Conformity Applicability Analysis for Replacement of Water Reservoirs

	Annual Emissions (tpy)		
	VOC	NO _x	CO
Year			
2006	1.0	14.7	3.2
2007	1.7	24.7	5.4
2008	0.6	9.4	2.1
De Minimis Threshold	100	100	100

D.4.4 Regional Significance

When the total emissions of the nonattainment and maintenance criteria pollutants do not exceed the de minimis limit, the emissions must then be compared to the air quality emissions inventory of the air basin to determine regional significance of the federal action. If the amount of the emissions is greater than 10 percent of the emission inventory, the federal action is considered regionally significant for that pollutant (40 CFR Part 93, Subpart 153[i]).

Table D-5 compares the net emissions from the construction of the Proposed Action with the San Francisco Bay Area Air Basin (Basin) emissions inventory. NO_x and VOC emissions inventory data were obtained from the *San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard* (BAAQMD et al., 2001). CO emission inventory data were obtained from the *Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas* (CARB, 1998). The potential increase in emissions of VOCs, NO_x, and

CO for construction and operation are below the 10 percent threshold. Therefore, the Proposed Action would not be considered regionally significant.

TABLE D-5

Comparison of Project Emissions and Emissions Inventory

Environmental Assessment for the Replacement of Water Reservoirs, Travis Air Force Base, California – Clean Air Act Conformity Applicability Analysis for Replacement of Water Reservoirs

	VOCs	NO _x	CO
Basin Emissions Inventory	162,425	191,625	692,040
Construction and Operation Emissions (2006)	1.0	14.7	3.2
Percent of Emissions Inventory	0.0006	0.008	0.0005
Basin Emissions Inventory	162,425	191,625	692,040
Construction and Operation Emissions (2007)	1.7	24.7	5.4
Percent of Emissions Inventory	0.001	0.01	0.001
Basin Emissions Inventory	162,425	191,625	626,340
Construction and Operation Emissions (2008)	0.6	9.4	2.1
Percent of Emissions Inventory	0.0004	0.005	0.0003

Notes:

All emissions are listed in tpy.

Basin emissions inventory data for NO_x and VOCs were obtained from *San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard* (BAAQMD et al., 2001). Emissions inventory data for 2006 were used for emissions comparisons for all years.

Basin emissions inventory data for CO were obtained from *Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas* (CARB, 1998). Emissions inventory data for 2005 were used for the emissions comparison of 2006 and 2007, and data for 2010 were used for the emissions comparison of 2008.

D.4.5 Conclusion

The emissions calculated for each calendar year are below the de minimis level for each of the pollutants analyzed. In addition, the emissions of CO and O₃ precursors would not exceed 10 percent of the total Bay Area Air Basin emission inventories listed in the SIP. On the basis of the conformity applicability criteria, the Proposed Action conforms to the most recent EPA-approved SIP; therefore, the Proposed Action is exempt from the CAA conformity requirements and does not require a detailed conformity demonstration.

D.5 Works Cited

Bay Area Air Quality Management District (BAAQMD), Association of Bay Area Governments, and Metropolitan Transportation Commission. 2001. *San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard*. October.

California Air Resources Board (CARB). 1998. *Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas*. September

South Coast Air Quality Management District. 1993. *CEQA Air Quality Handbook*. April.

Appendix E

Proof of Publication

**PROOF OF PUBLICATION
(2015.5 C.C.P.)**

STATE OF CALIFORNIA

COUNTY OF SOLANO, s.s.

I am a citizen of the United States and a resident of the county of Solano. I am over the age of 18 years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of THE VACAVILLE REPORTER, a newspaper of general circulation, printed in the city of Vacaville and published daily in the cities of Vacaville and Dixon and throughout the county of Solano. The Reporter has been adjudged a newspaper of general circulation for the cities of Vacaville and Dixon, pursuant to Decree No. 25888 on June 30, 1952, and Decree No. 1006329 on March 20, 1996. The notice of which the attached is a printed copy (set in type not smaller than non-pareil), has been published in each regular and entire issue of THE VACAVILLE REPORTER. And not in any supplement thereof, on the following dates, to wit:

MARCH 10th, 2005

MARCH 12ST, 2005

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Vacaville, California this **12TH**

day of **MARCH 2005**

Cynthia Reed
(Signature)

Cynthia Reed

(This space is for the County Clerk's Filing Stamp)

PUBLIC NOTICE

Proof of Publication of

PUBLIC NOTICE
15-DAY PUBLIC COMMENT PERIOD ON ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

Travis Air Force Base will accept public comment on an Environmental Assessment and Finding of No Significant Impact (FONSI) for a project to construct Water Reservoirs at Travis Air Force Base, Solano County, California.

The corresponding FONSI is available for local review at the following community libraries: Fairfield-Suisun Community Library 1150 Kentucky Street, Fairfield, CA and the Vacaville Public Library, 1020 Ulatis Drive, Vacaville, CA. The information is also available at the Travis AFB Library located in Building 436, and the 60th Civil Engineer Environmental Flight located in Building 570.

Please submit written comments to 60 CES/CEV, 411 Airmen Drive, Travis AFB, CA 94535. Attn: Capt Jeremiah Frost or Rudy Pontemayor.

Published March 10 & 12 2005 #706

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